CellML Specification - Overview

Recommendation - 10 August 2001

This Version:
> http://www.cellml.org/public/specification/20010810/cellml_specification.html

Latest Version:
> http://www.cellml.org/public/specification/cellml_specification.html

Previous Versions:
> http://www.cellml.org/public/specification/20010518/cellml_specification.html
> http://www.cellml.org/public/specification/20010302/cellml_specification.html

Abstract

This document specifies CellML^{TM} 1.0, an XML-based language for describing and exchanging models of cellular and subcellular processes. MathML embedded in CellML documents is used to define the underlying mathematics of models. Models consist of a network of re-usable components, each with variables and equations manipulating those variables. Metadata may be embedded in CellML documents using RDF.

Status of this document

The 10 August 2001 version of the CellML 1.0 specification has been reviewed and endorsed by all of the authors of and contributors to the document. As of 10 August 2001, the syntax and semantics of all of the elements in the CellML 1.0 namespace are frozen.

The authors invite feedback from the public. Readers are encouraged to subscribe and send comments to the cellml-discussion[1] mailing list. Alternatively, readers may send comments and questions via e-mail to info@cellml.org.

The latest version of the CellML specification is always available at the following URI:

> http://www.cellml.org/public/specification/index.html

The list of errata associated with this document is available at the following URI:

> http://www.cellml.org/public/specification/20010810/errata.html

Quick Links

The CellML specification can be viewed as one large document in either HTML[2] or PDF[3] formats, or viewed in the following manageable sections:

- **Introduction**[4] — This section introduces CellML, XML, the terminology used throughout the specification, and the structure of the specification.

- **Fundamentals**[5] — This section explains concepts used in all other sections of the specification, such as the definition of a valid CellML identifier and the use of XML namespaces in CellML.

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[1]http://www.cellml.org/public/mailing_lists/discussion.html
[2]http://www.cellml.org/public/specification/20010810/cellml_specification.html
[3]http://www.cellml.org/public/specification/20010810/cellml_specification.pdf
[4]http://www.cellml.org/public/specification/20010810/introduction.html
[5]http://www.cellml.org/public/specification/20010810/fundamentals.html

- **Model Structure**[6] — This section describes how models are organised in CellML. It includes an explanation of the use of a network of components to define a model and a discussion of variables in CellML.

- **Mathematics**[7] — This section describes how mathematical expressions are defined in CellML documents using MathML, and defines the CellML subset of MathML elements.

- **Units**[8] — This section explains the requirements for units in CellML and describes how a modeller can define arbitrary sets of units.

- **Grouping**[9] — This section explains how a model can be organised into logical encapsulation and geometric containment hierarchies by grouping components.

- **Reactions**[10] — This section introduces CellML syntax that allows the modeller to classify the involvement of the participants in the chemical expressions that make up reaction/pathway models.

- **Metadata Framework**[11] — This section describes how RDF is used in CellML documents to define metadata and associate it with models, model components, and other CellML elements.

- **Appendices**[12] — The appendices cover advanced and technical topics including the CellML DTD, recommendations for adding scripts to CellML documents, and units processing algorithms.

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[6] http://www.cellml.org/public/specification/20010810/model_structure.html
[7] http://www.cellml.org/public/specification/20010810/mathematics.html
[8] http://www.cellml.org/public/specification/20010810/units.html
[9] http://www.cellml.org/public/specification/20010810/grouping.html
[10] http://www.cellml.org/public/specification/20010810/reactions.html
[11] http://www.cellml.org/public/specification/20010810/metadata.html
[12] http://www.cellml.org/public/specification/20010810/appendices.html