

Universal Maths Conversion Library

- A tentative to build a generic framework to embed various converters into a shared programming library
- Support of mainstream formats (MathML, LaTeX) as well a specific Braille codes



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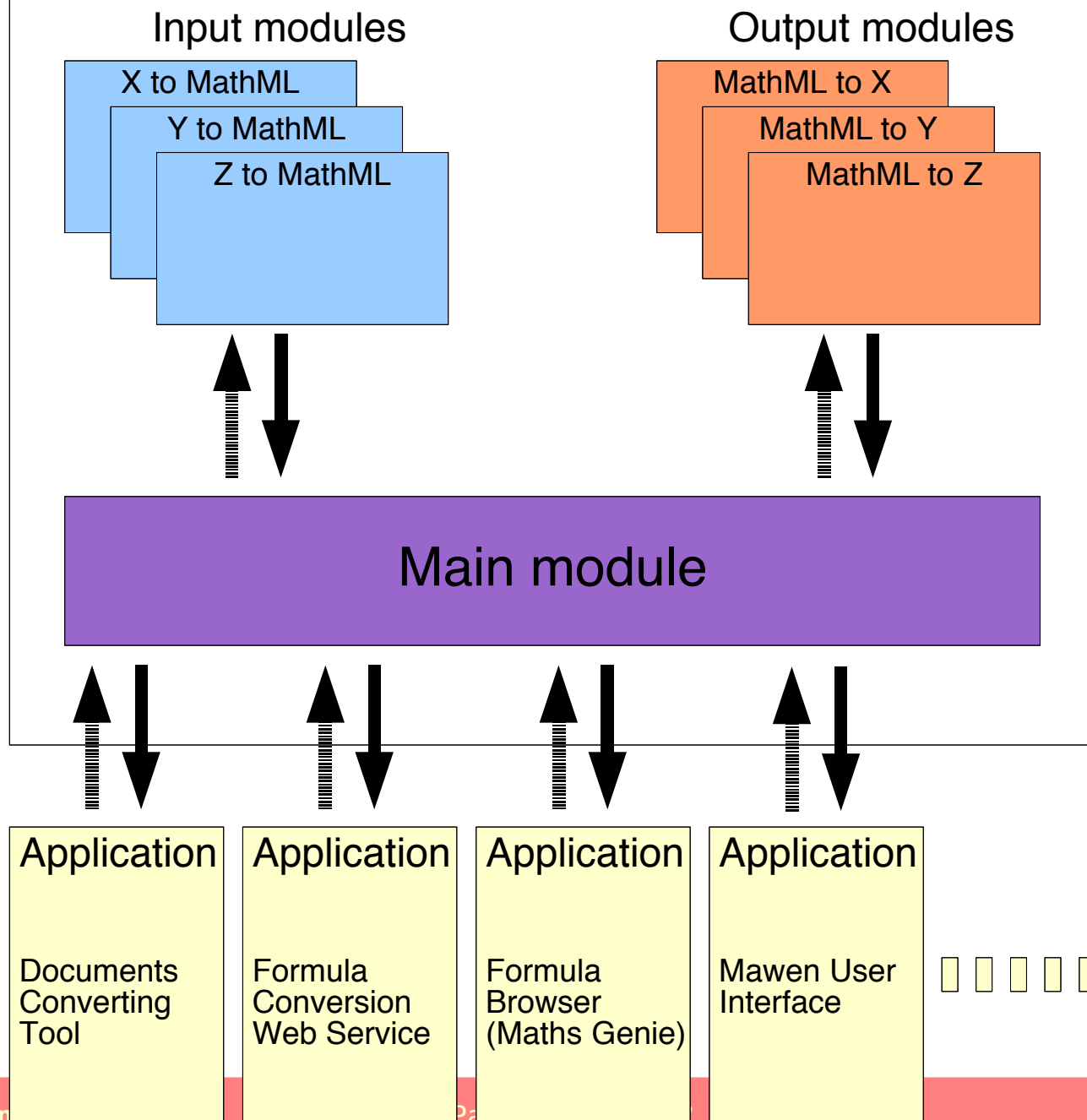


International Group Universal Math Accessibility

Universal Maths Conversion Library

- Interoperability of all our converters
- Usable in any application
- Usable in most programming languages
- Encapsulate conversion modules developed in various programming languages
- Based on a central Language: Canonical MathML

Universal Maths Conversion library



Main module API

- Exist_Input_Module(name)
- Exist_Output_Module(name)
- Exist_Braille_Table(name)
- Translate_Braille(
input_table, output_table,
input_string, output_string)
- Transcribe(
input_format, output_format,
input_string, output_string)

Universal Maths Conversion Library

- Development of input modules
($X \rightarrow \text{MathML}$)
 - implement a simple API
in any programming language
- Development of output modules
($\text{MathML} \rightarrow X$)
 - implement a simple API
in any programming language
 - or develop an XSLT stylesheet

UMCL Canonical MathML

- Why is it not simply “MathML”
 - Unique representation of any Math structure
 - Canonisation stylesheet is available
 - Facilitates the production of the “MathML to X” modules (~ 90% of work)
 - Documents can be stored using Canonical MathML. Saves processing time!

Canonical MathML is always valid MathML

Current state

- **MathML -> Canonical MathML**
- MathML -> French (1971, 2001)
- MathML -> Italian
- MathML -> Marburg
- MathML -> British (beta)
- MathML -> Nemeth
- Latex -> MathML
- In development
 - Marburg -> MathML

Universal Maths Conversion Library

- <http://inova.snv.jussieu.fr/maths/umcl>
 - Better to use with MathML enabled browser
 - Mozilla based (firefox, galeon, epiphany, camino, flock, netscape)
 - IE with MathPlayer plugin
- UMCL is an opensource project (GNU LGPL)

Please use MathML!!

- Alls these projects need documents containing MathML expressions
 - It can be converted to Braille
 - It can be Spoken, It can be Enlarged
- Lots of other projects can be cited
- Daisy consortium recently released its Mathematics Modular extension, based on MathML

Even for the mainstream!

$$\int_0^1 f(t) dt = \lim_{n \rightarrow +\infty} \sum_{k=0}^n \frac{1}{n} f\left(\frac{1}{k}\right)$$

$$\int_0^1 f(t) dt = \lim_{n \rightarrow \infty} \sum_{k=0}^n \frac{1}{n} f\left(\frac{1}{k}\right)$$