

Request for funding lua \TeX math

The lua \TeX project's main objective is to open up the \TeX engine using the scripting language Lua. Instead of extending \TeX with new functionality we provide the means for macro writers to do it the way they like. There are several instruments for this:

- Font loading and handling is under user control. Support for OpenType fonts has been added and since lua \TeX builds upon pdf \TeX font inclusion is also dealt with.
- Callbacks are provided at all crucial points in the process. This gives the user the option to reimplement and extend present functionality.
- Reading from media, tokenization and several stages of building node lists can be influenced in detail.
- Nodes can carry attributes which makes it possible to implement various features where signalling and tagging is mandate.

More details about what has been done so far can be found in publications in user group journals, presentations given at conferences, the user manual and development reports, and the website www.luatex.org. Among the things to be done are: opening up math, more control over line- and pagebreaking (including inserts), opening up alignments and providing a backend font constructor mechanism on top of virtual fonts.

Next on the agenda is opening up and extending the math machinery. As said, no alternative implementations will be developed, but it will be possible to replace existing ones (partially or whole) by using Lua code. Math is a special area of \TeX because it is rather interwoven and uses a highly optimized multipass approach all by itself. For this reason one of the key lua \TeX instruments, attributes, is not yet available in math mode: so far there has been no possibility to set aside the needed development time.

As far as extending is concerned: while opening up the math machinery, we will cooperate with the \TeX Gyre font developers so that we can fully profit from new OpenType fonts features like Microsoft's 'math' feature. This will require some small extensions to the internal structures.

Opening up the math engine so that it will not only be accessible but also controllable from Lua will take an estimated two months' effort. As with all development so far, we will work on a strict schedule.

The project is done by Taco Hoekwater (pascal and c coding), Harmut Henkel (pdf backend) and Hans Hagen (project lead, lua coding). In principle the work takes place alongside regular jobs, but since programming \TeX is not a core activity of Taco's employer, so far his coding has been mostly funded by the oriental \TeX project. The first stage is finished and it is expected that this funding project will continue in the future. However, in the meantime additional funding is needed.

For opening up math we seek funding of 6000 euro so that Taco can spend two months on programming. The results will be presented in articles and presentations.

As said already: the main objectives are opening up. By doing so we hope that future generations of \TeX users and developers can implement the solutions they like. Being a key component of \TeX , math cannot be left out of the picture.

On behalf of the lua \TeX team,

Hans Hagen, April 16, 2008