

MkIV Hybrid Technology

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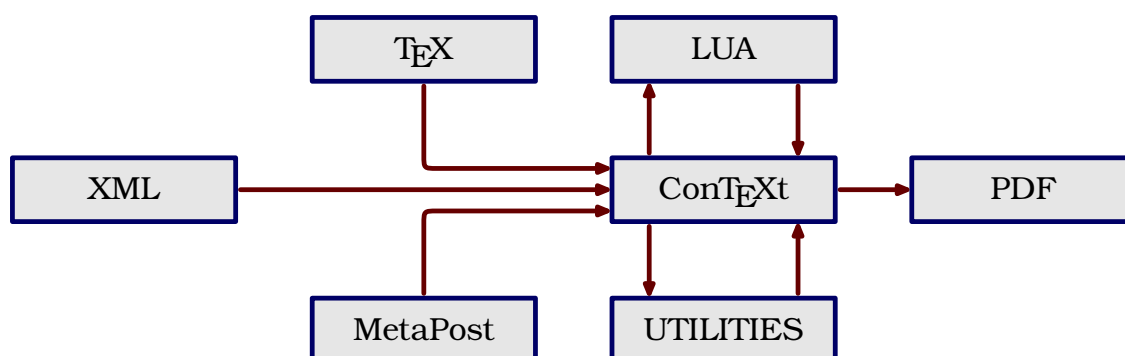
Introduction

We're halfway the development of Lua \TeX (mid 2009) and substantial parts of Con \TeX t have been rewritten using a mixture of Lua and \TeX . In another document, “Con \TeX t MkII–MkIV, the history of Lua \TeX 2006–2009”, we have kept track of how both systems evolved so far¹. Here we continue that story which eventually will end with both systems being stable and more or less complete in their basic features.

The title of this document needs some explanation, although the symbols on the cover might give a clue already. In Con \TeX t MkIV, as it is now, we mix several languages:

- good old \TeX : here you will see `{}` all over the place
- fancy MetaPost: there we use quite some `()`
- lean and mean Lua: both `{}` and `()` show up a lot there
- unreadable but handy xml: immediately recognizable by the use of `<>`

As we use all of them mixed, you can consider MkIV to be a hybrid system and just as with hybrid cars, efficiency is part of the concept.



In this graphic we've given Lua a somewhat different place than the other three languages. First of all we have Lua inside \TeX , which is kind of hidden, but at the same time we can use Lua to provide whatever extra features we need, especially when we've reached the state where we can load libraries. In a similar fashion we have utilities (now all written in Lua) that can manage your workflow or aspects of a run (the `mtxrun` script plays a central role in this).

The mentioned history document was (and still is) a rather good testcase for Lua \TeX and MkIV. We explore some new features and load a lot of fonts, some

¹ Parts of this have been published in usergroup magazines like the Maps, TugBoat, and conference proceedings of Euro \TeX and tug.

really large. This document will also serve that purpose. This is one of the reasons why we have turned on grid snapping (and occasionally some tracing).

Keeping track of the history of Lua \TeX and MkIV in a document serves several purposes. Of course it shows what has been done. It also serves as a reminder of why it was done that way. As mentioned it serves as test, both in functionality and performance, and as such it's always one of the first documents we run after a change in the code. Most of all this document serves as an extension to my limited memory. When I look at my source code I often can remember when and why it was done that way at that time. However, writing it down more explicitly helps me to remember more and might help users to get some insight in the developments and decisions made.²

Of course, although I wrote most of the text, this document is as much a reflection of what Taco Hoekwater and Hartmut Henkel come up with, but all errors you find here are definitely mine.

Hans Hagen, Hasselt NL,
September 2009 and beyond

<http://www.luatex.org>

² I read a lot and regret that I forget most of what I read so fast. I might as well forget what I wrote so have some patience with me as I repeat myself occasionally.

The team



The LuaTeX project started in 2005 as a follow up on some experiments. The team consists of Taco Hoekwater, Hartmut Henkel and Hans Hagen, here pictured at work by Duane Bibby. The machine they work on is inspired by the Paige Typesetter (<http://www.twainquotes.com/paige.html>).

