Re: Has anyone produced a board using Kicad?

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- *From*: fpga_toys@xxxxxxxxx
- *Date*: 21 May 2006 16:14:28 −0700

DJ Delorie wrote:

> fpga_toys@xxxxxxxxx writes:
>
> > It really needs to be the same tool,
>
> Or at least *seem* like it's the same tool. Otherwise, I agree.

On larger designs, memory is being pushed to maintain lists and objects instantiated already. Paging severely cuts into performance. When running as a separate application, there is substantial page replication introduced for every data page for a long list of shared library instances, plus replication of the netlists. Likewise, performance is critially tied to working set, having a second application running concurrently with equally large working set, will provoke substantial cache thrashing, which will show up as memory latency induced jerkyness in the UI, as the cache is flushed out and reloaded between contexts. While these may seem like parameters in the application architecture that can be ignored, perceived UI performance is heavily dependent on them. Similarly the communication between separate applications results in context switches, which causes additional cache thrashing by including large sections of the kernel in the working set. Consider the processor is some 20−100 times faster than L2/L3 cache these days, and the cache is frequently another 10−50 times or more faster than memory. Exceeding cache working sets, effectively turns the machine into a 50MHz processor again.

There are substantial performance reasons suggesting that it should be the same application, (just a different thread at most) to conserve memory resources, and improve performance. While they may not be critical for toy student projects, for many real life projects which are much larger, they become critical UI problems. The sample ProofOfConcept design I sent you, is about 1/5 the size of several production designs I have done using PCB.

When the typical desktop CPU comes standard with 10MB or better of L2

cache, these issues might go away. Last time I checked, this was only available for high end Itianum processors, well outside the reach of most mortals in cost (or me right now).

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