

# Re: FPGA recommendations

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  - *Date:* 6 Dec 2005 16:08:58 +0200
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Spehro Pefhany wrote:

On 5 Dec 2005 13:10:28 -0800, the renowned "stickyfox@xxxxxxxxxx" <[stickyfox@xxxxxxxxxx](mailto:stickyfox@xxxxxxxxxx)> wrote:

Hello all,

I'm looking for an FPGA platform to produce some low-volume designs on, and I would like to hear the group's suggestions on manufacturers.

What I am most concerned about is the flexibility and functionality of the programming tools. In other words, whether they're crippled unless I pay thousands of dollars for the "full version." I won't be selling thousands of units, so I can't consider the software an investment. I don't mind paying a reasonable amount for a compiler, but I am not in the same market as Linksys and I can't afford what they pay for software.

I am currently using Altera flex0k's and quartus, which is free but has some fairly minor limitations. I can more or less live with the restrictions as they more or less force me to buy a larger chip than is necessary but still do basically anything. However, they could pull the rug under me at any moment by not licensing the free compiler (it requires a new license file periodically.) Is there a better option? I recently discovered that Atmel has a CPLD/FPGA line; does anyone have experience with it?

Look at Xilinx. They seem to be aggressively pursuing your (our) market. You can download the software, IIRC the limitations don't kick in until you hit the really big expensive parts. The Mentor ModelSim requires a node-locked license, but it's free as well (and I

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think  
Xilinx is working on their own simulation package). Apparently  
the  
Mentor s/w deliberately runs slower than the \$\$ package,  
though, once  
you exceed 10,000 lines of code).

Altera is similar, except that they already have simulation software (and have had for a long while, I believe). I've never bothered with the free ModelSim for Altera Quartus.

All major FPGA/CPLD players use node-locking on their tools, and all (that I know of) have some sort of time limitation on their free versions. Altera paid-for licenses are permanent - I'd guess the same applies to Xilinx.

Altera and Xilinx are by far the biggest players in the fpga market - there are others in the CPLD line (Lattice has some nice parts). But for fpgas, you are best with A or X unless you want a more specialist part.

Also, at least according to my FAE, they deliberately don't go overboard on protecting their 'evaluation' software (you can de/re-install to get another 'evaluation', he says) because they want to sell silicon. They have soft processor cores available (8-bit is free in object code) and some of their huge 90nm arrays have a handful of PowerPCs littering the corners of the chip in case you need a processor.

I've found the S/W pretty much bug-free (perhaps not quirk-free) so far, though it will tax the speed of the best computer you can buy. I have not used Altera's software, so I can't compare.

<http://www.xilinx.com/xlnx/xebiz/designResources/contentContainer.jsp?sGlobalNavPick=PRODU>

I haven't done more than play around with X's software, and that was a while ago. But it struck me that X tools were made from a collection of different tools bundled together, while A tools were much more integrated. This made the Altera tools more consistent - I think they are

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a definite selling point for Altera.

Both A and X have soft processors, available under similar terms and with similar functionalities, although I personally think the Altera soft processor is a better system. Altera have effectively dropped their hard processor core line, having concluded that in virtually all cases, you are better with either a flexible soft processor or an external processor. Xilinx PPC parts are well publicised, but are a very small market.

The main difference between A and X, however, lies in their reputation for availability. I have never had to get hold of Xilinx parts, so I can't speak from personal experience, but the appearance seems to be that when Altera announce availability of a new part, you can order it. When Xilinx announces availability of a new part, you can get samples in about a year or so. If you look at the comp.arch.fpga newsgroup, you will see regular threads complaining about availability of X parts or asking when and where they can be bought.

Of course, opinions vary wildly, and depend on many factors (your target applications, the quality of your distributors, personal experience). But either way, drop the old Flex devices and go for Cyclone II / Spartan 3 (or Stratix II / Virtex for the high end) and the latest version of the tools.

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