



Reconfig 08 Conference

Future of Reprogrammability

Craig Kief

Deputy Director

DeputyDirector@fpgamac.com





2008

FPGA/Analog Market Study

GUIDES FOR
THE JOURNEY® | PiperJaffray

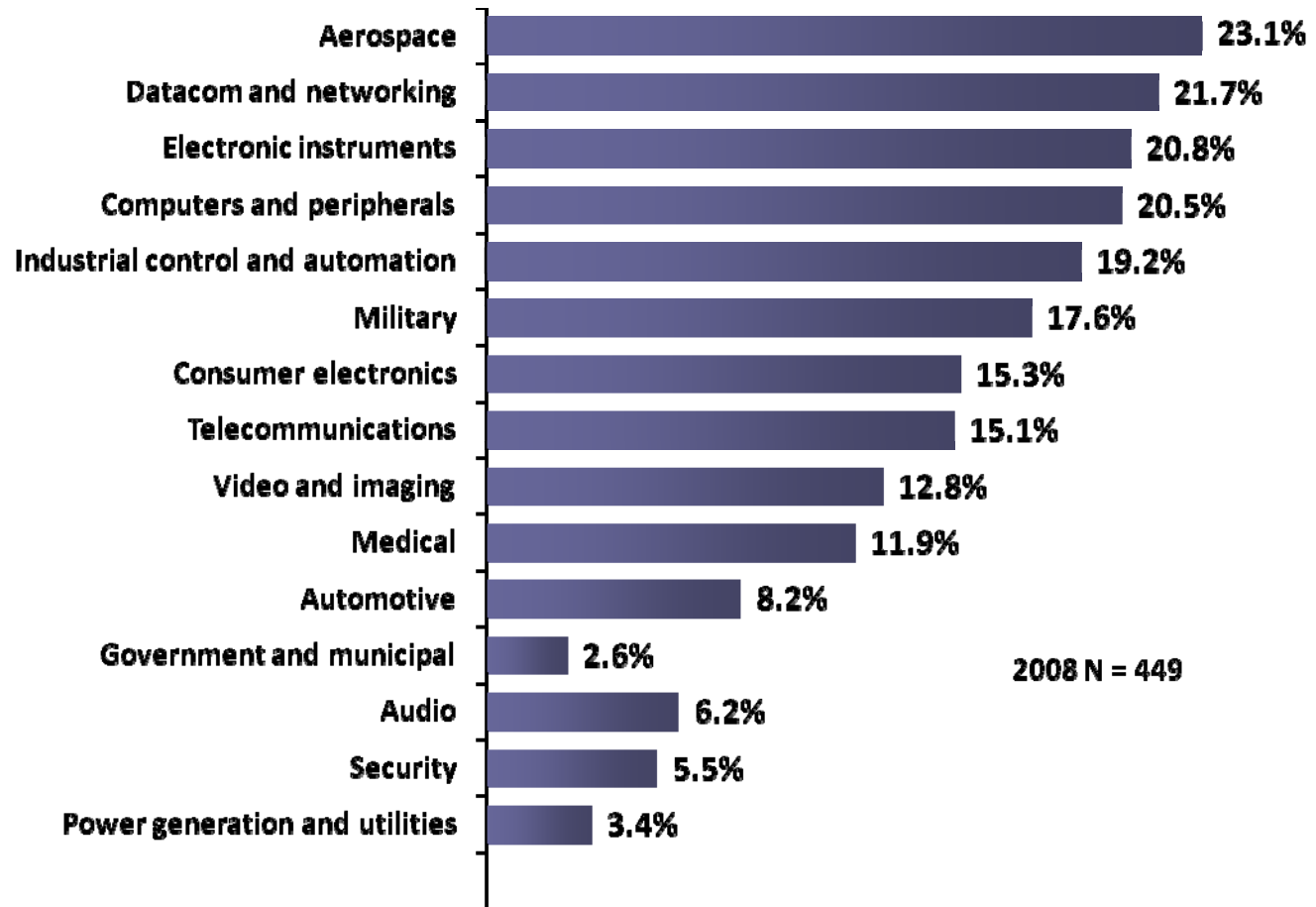


Methodology

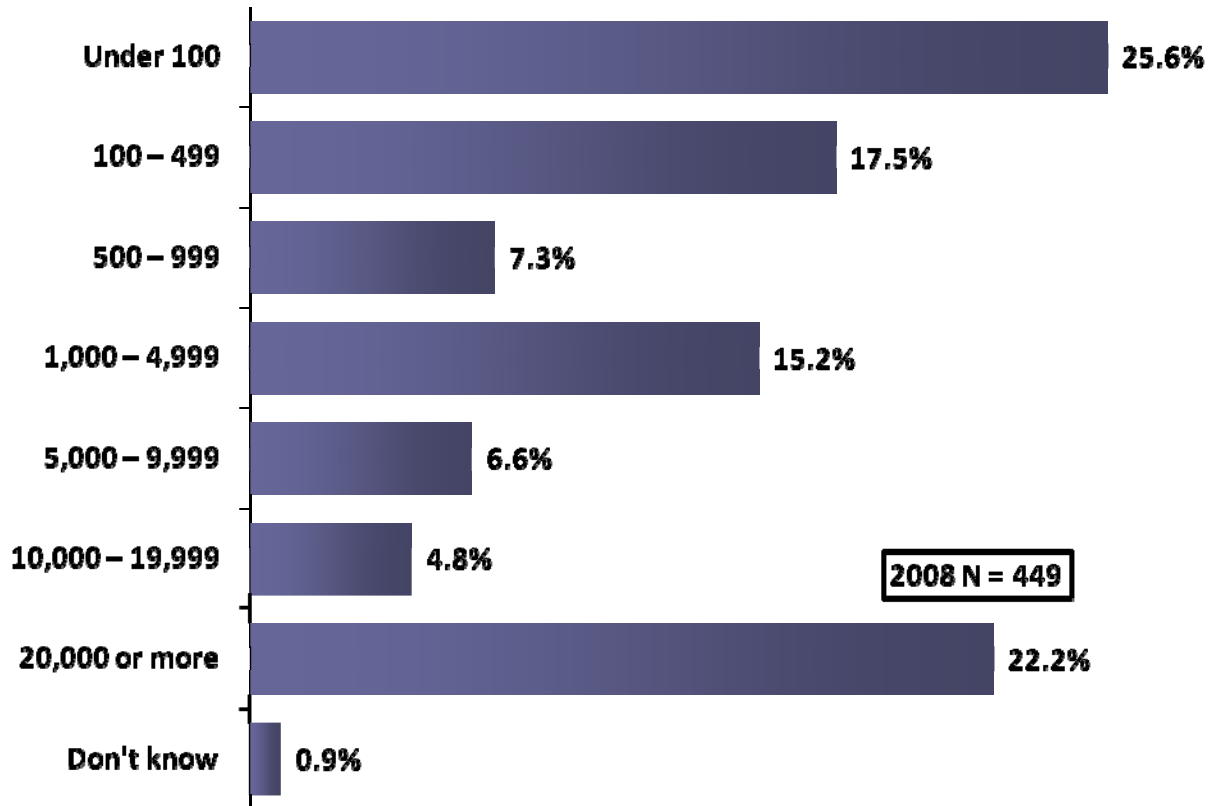
- **Purpose**
- **Fieldwork:** Email/web survey conducted from August 14 to Sept. 10, 2008
- **Returns: 449** completed surveys, **132** specific to mil/aero users, 95% +/- 5.0% confidence overall
 - E-mail invitation of subscribers to TechInsights *EE Times*



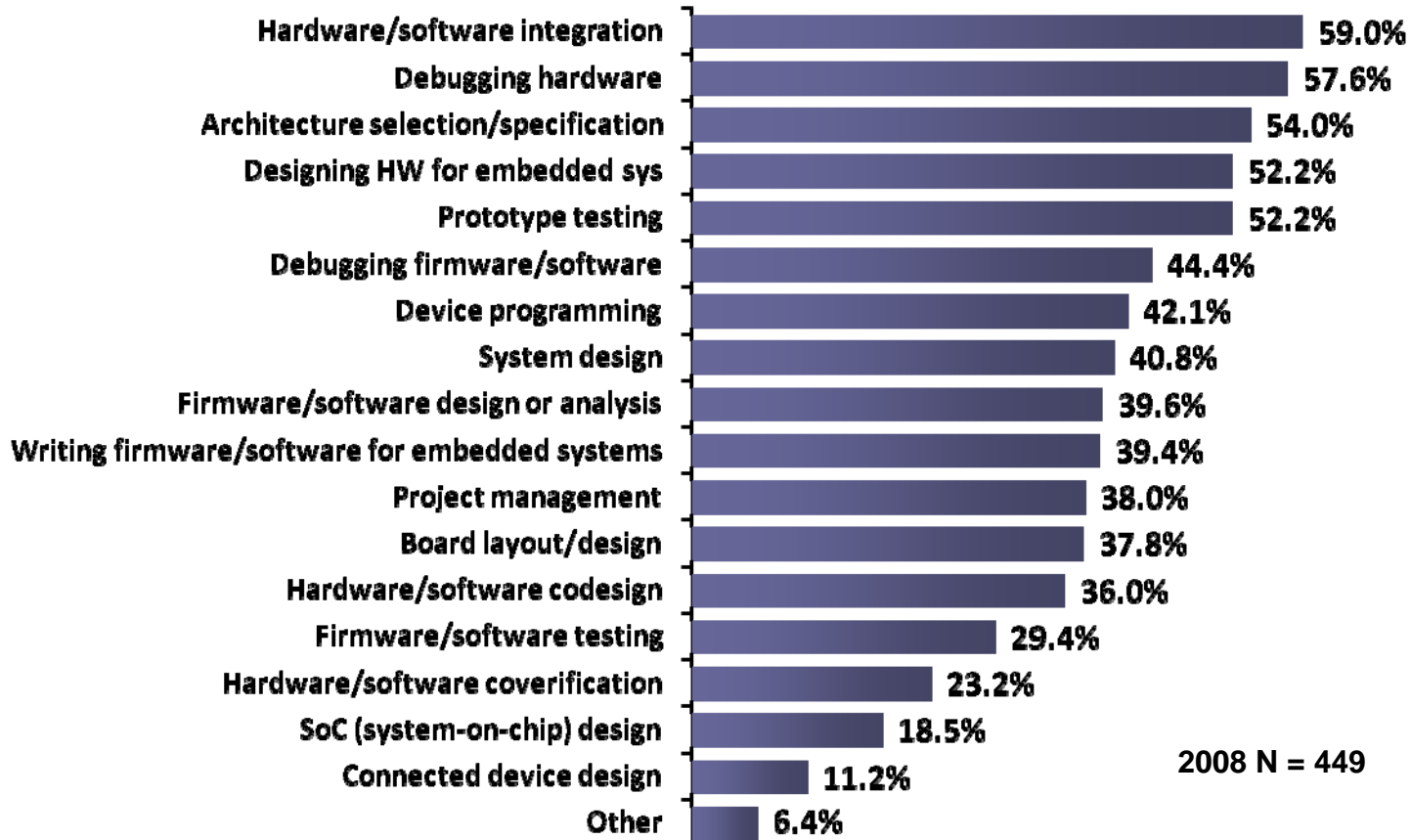
What industry best describes your company (or project)?



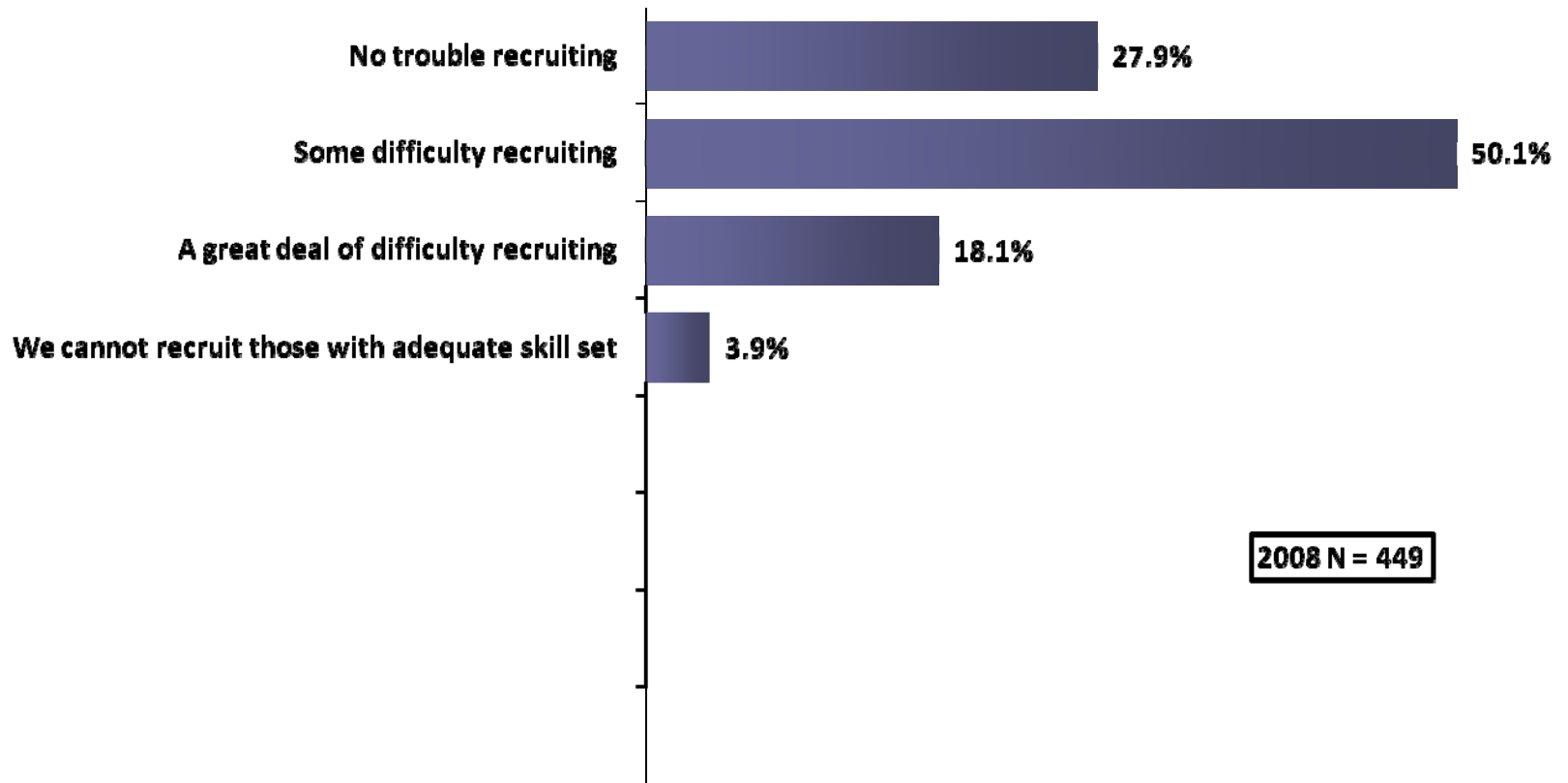
How many employees does your company have at all locations?



My job function includes:



Does your organization have any difficulty recruiting engineers with an adequate FPGA skill set?



Write in Questions – Talent and Training

Q. What do you do the most to prepare your designers to produce in your environment?

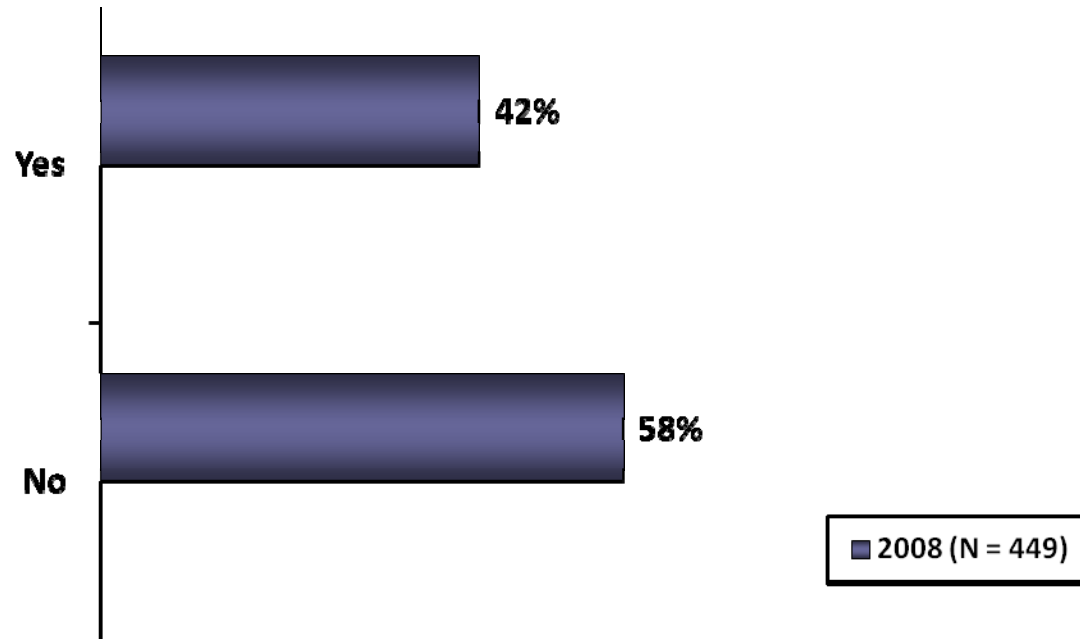
A1. In house training classes

A2. Manufacturer trainings

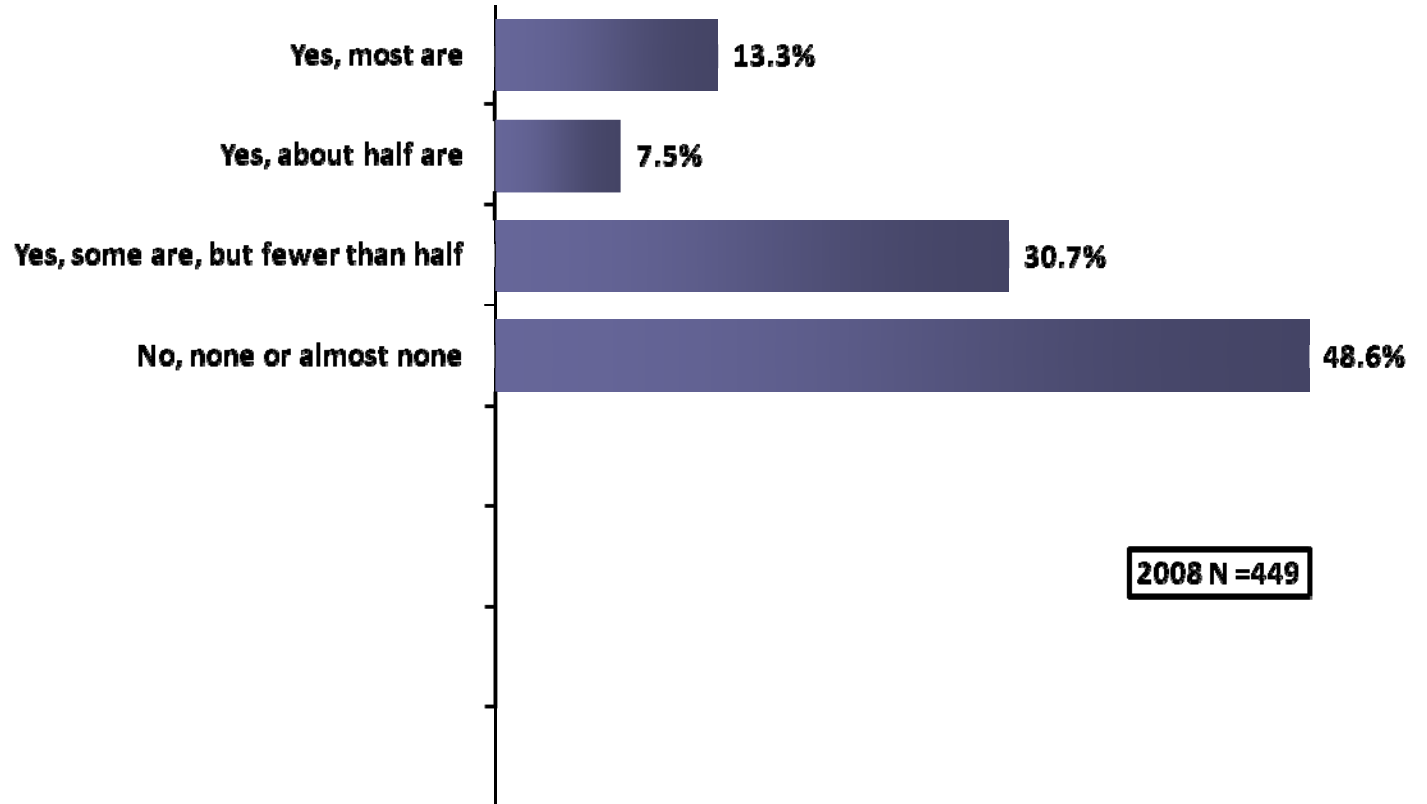
A3. Nothing, they come illprepared and they stay that way.



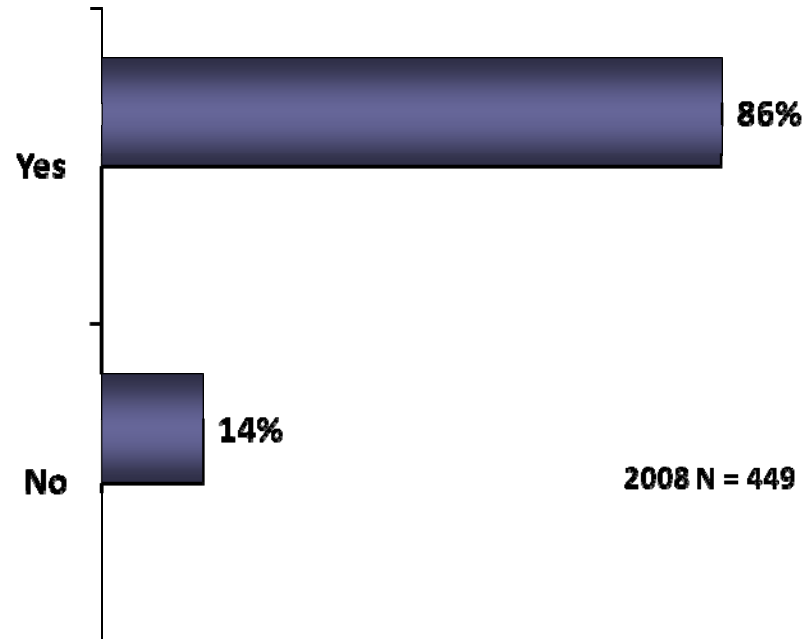
Will your organization be hiring more FPGA designers in the next year?



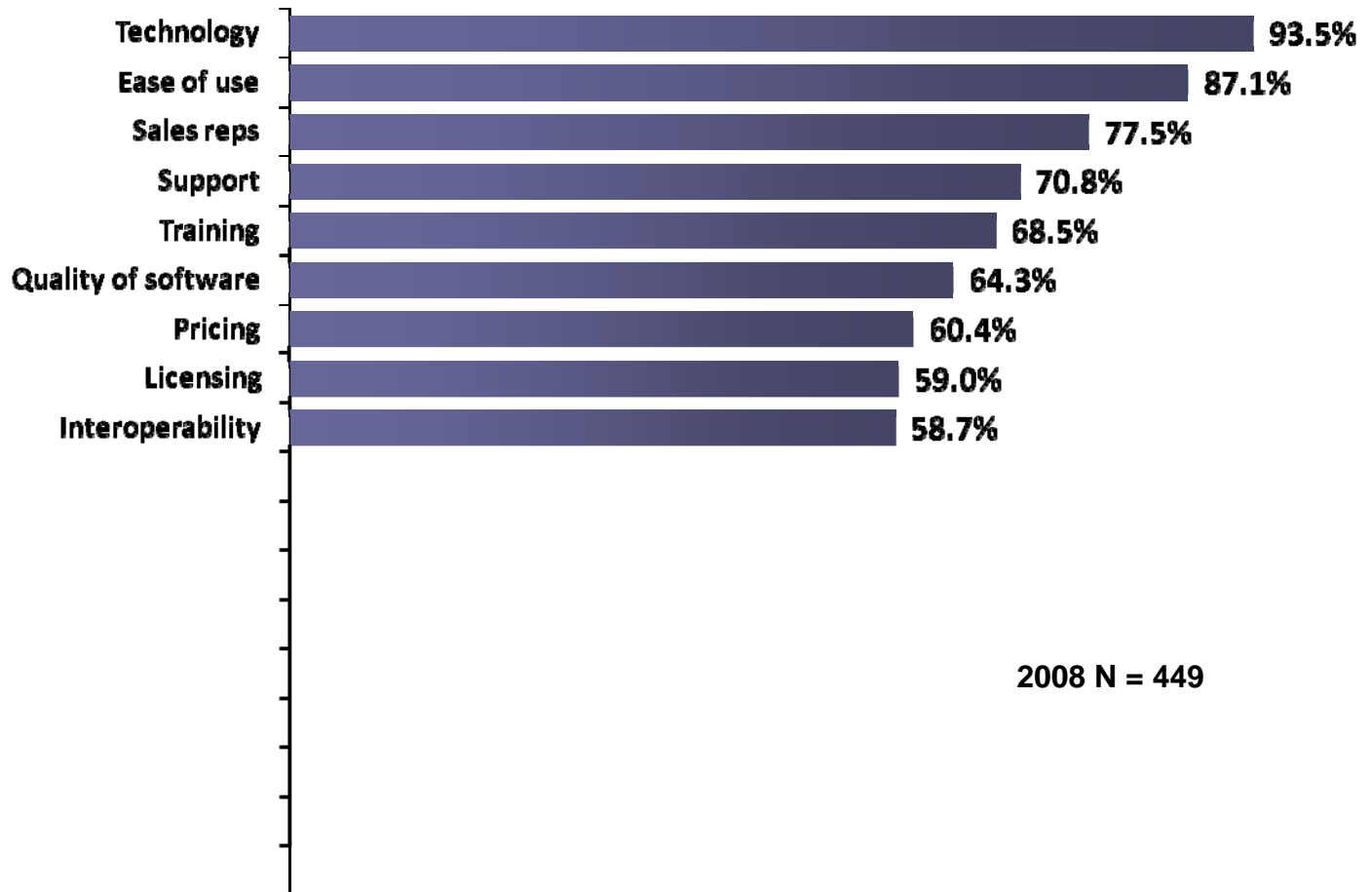
Are the managers in your organization also skilled FPGA designers?



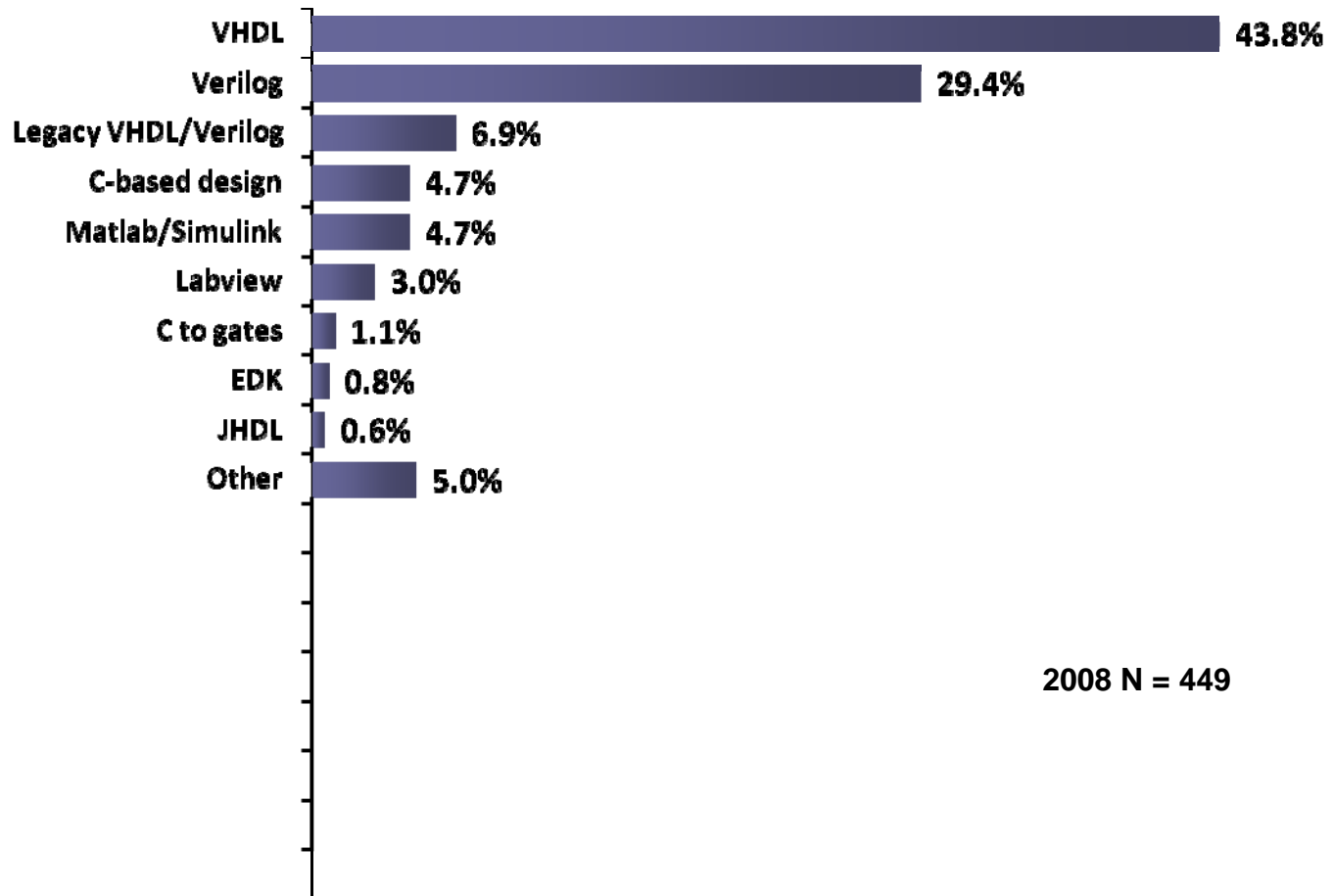
Do FPGAs meet your performance needs in terms of speed?



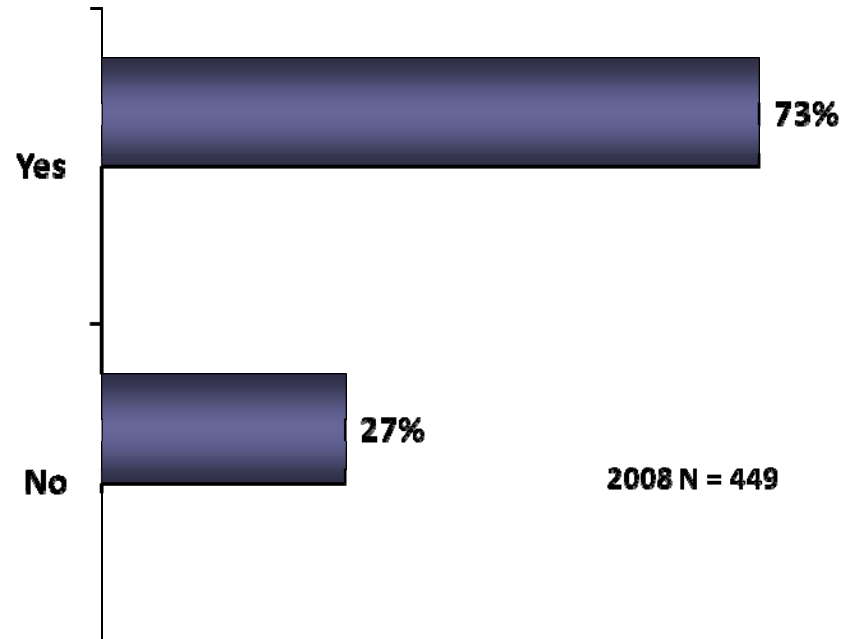
As you reflect on your total experience with FPGA vendors, what is your opinion or impression of the following? - *Favorable*



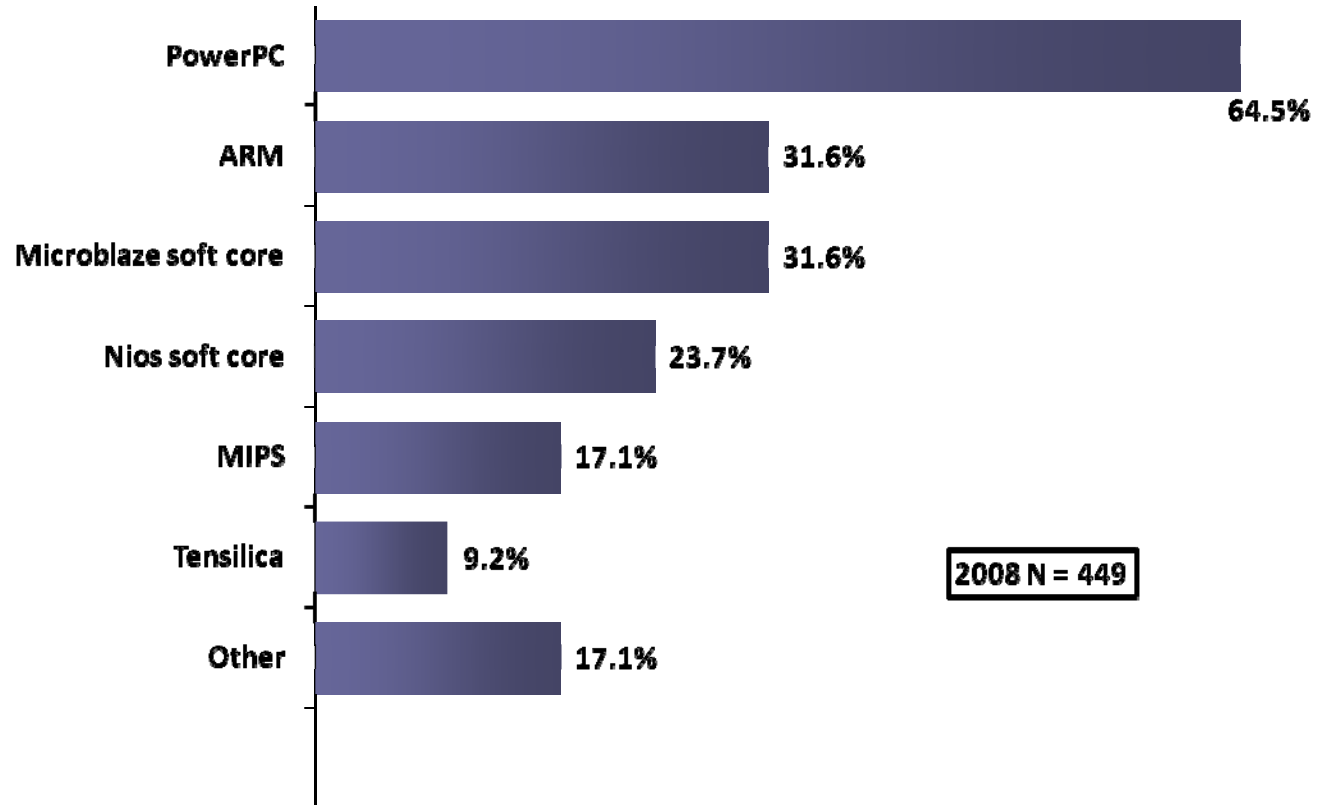
Choose your preferred method of design entry and languages used in your recent FPGA designs.



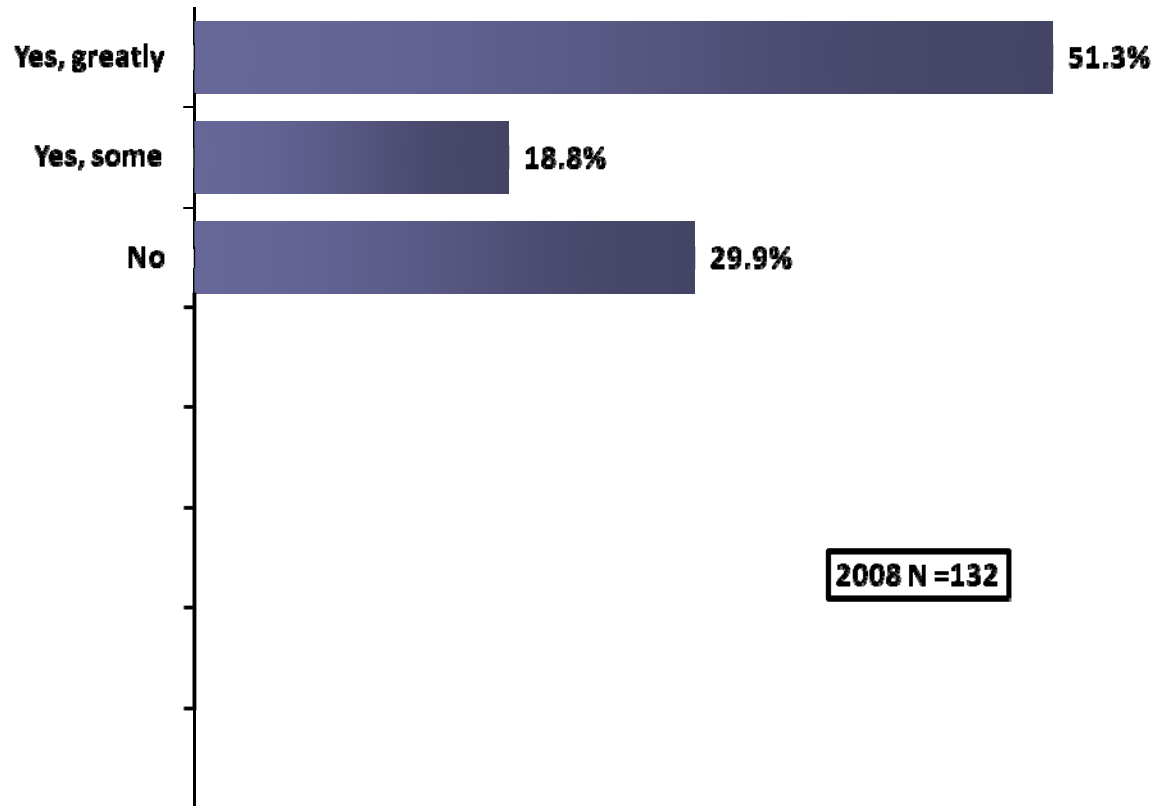
Does your project require software written for *embedded* processors?



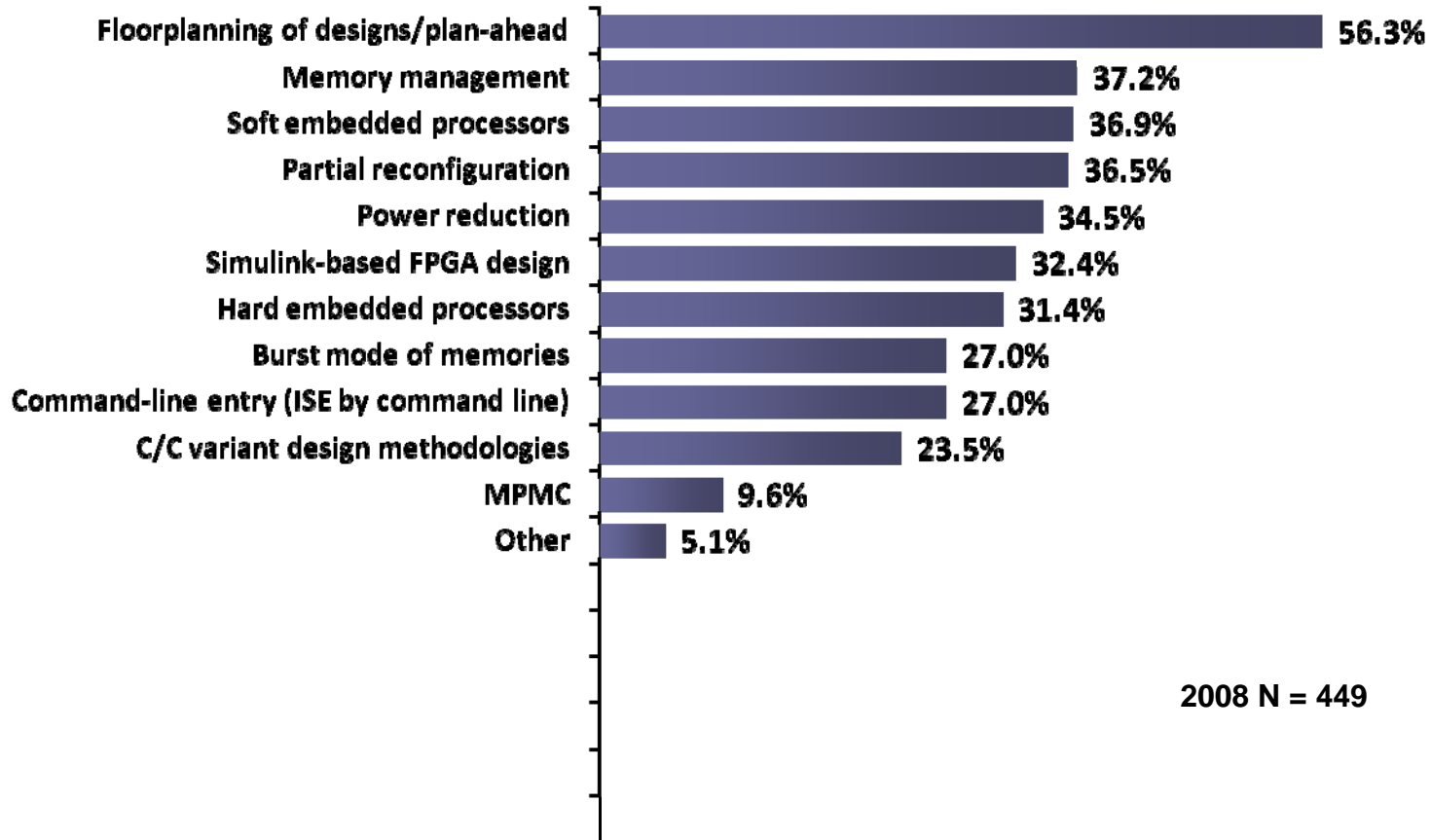
Which of the following embedded processor cores do you currently use in your designs? (Multiple responses OK)



Would your organization benefit from an *open source* version of Linux that was easily implementable in a PowerPC?



If you use Xilinx or Altera design tools, could you use tutorials, classes, how-to videos, etc. for any of these topics?



Write in Questions – How can FMAC help?

Q. What are the three biggest issues the FPGA Mission Assurance Center can solve to increase your organizations possibility of success with FPGA projects?

A1. Design obsolescence caused by IP updates/deletions from vendor libraries

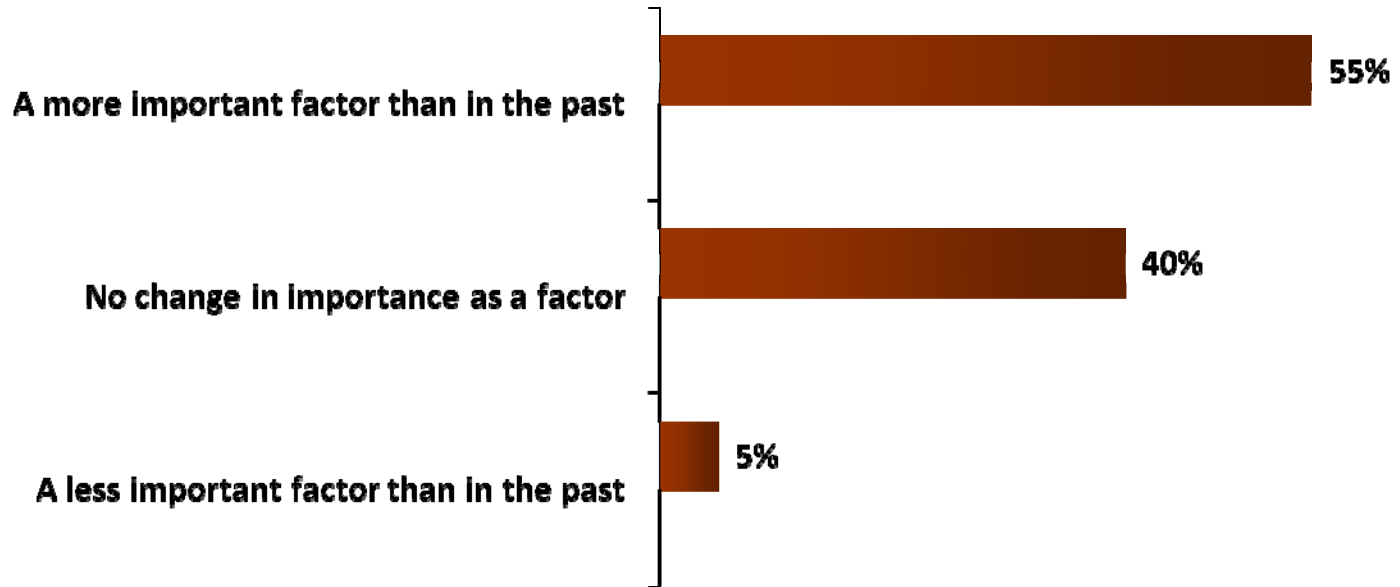
A2. Provide tutorials on best practices in estimation, design, verification, documentation

A3. Find a way to easily get an embedded processor core certified to DO-254/DO-178 Level A

A4. Quit sending out 12-minute surveys that take an hour and a half.



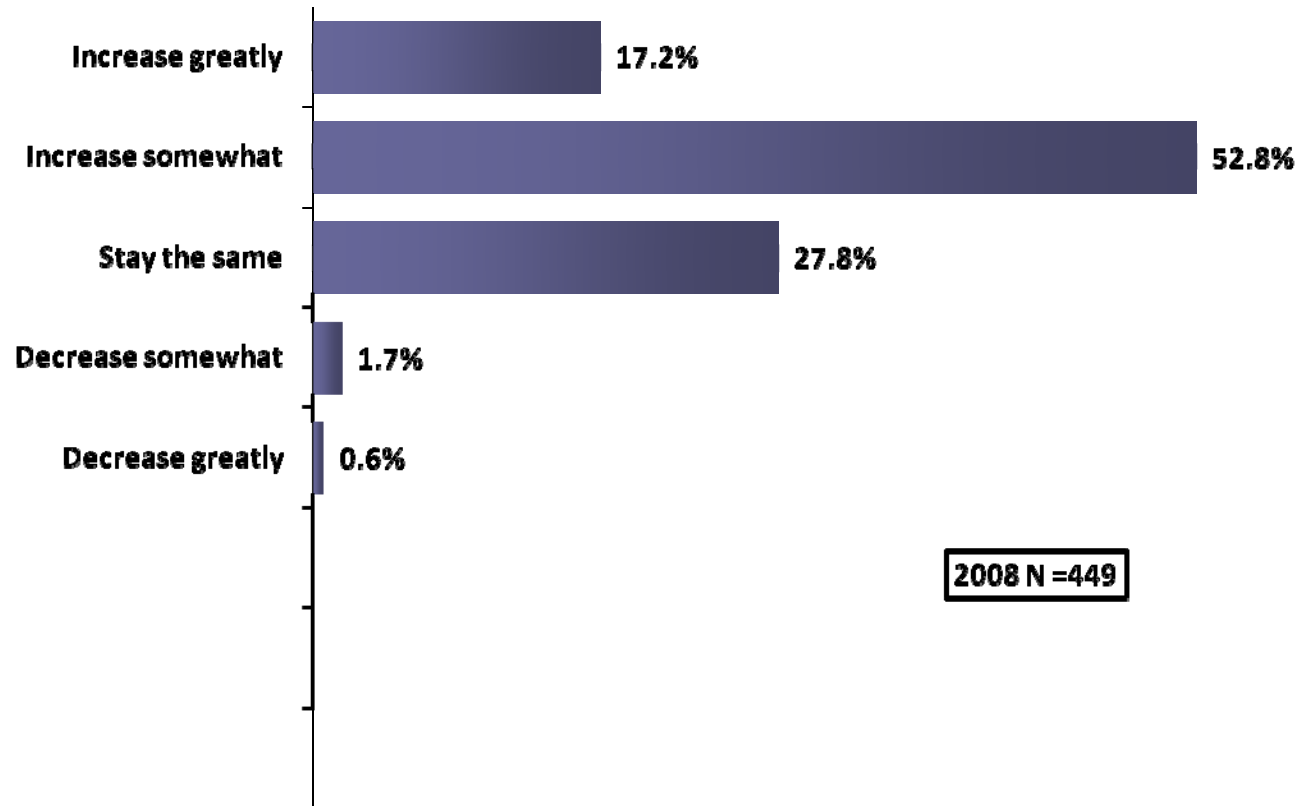
Considering the selection of FPGAs over the past 2-3 years, has the power consumption of the FPGA become...



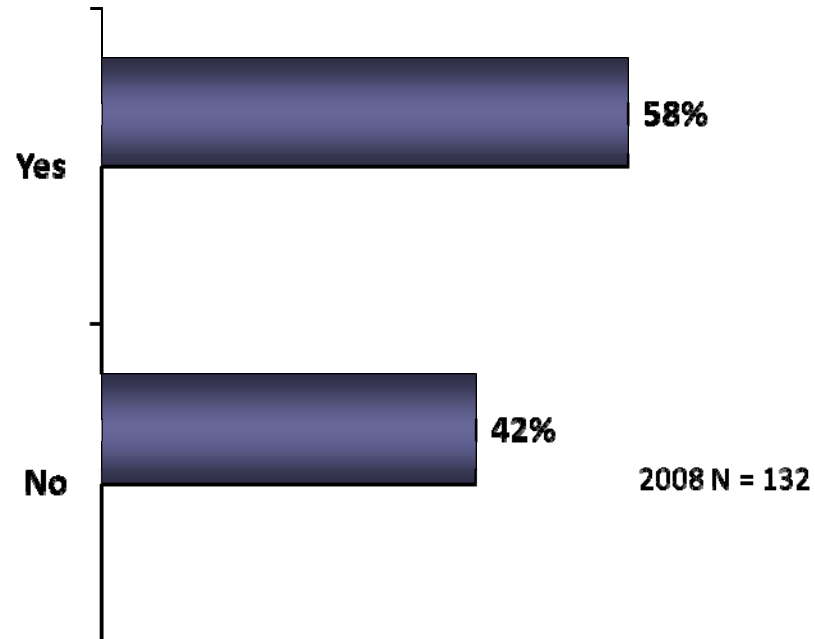
2008 N = 449

Over the next two years, will your use of each of the following types of integrated circuits *increase, decrease, or stay the same?*

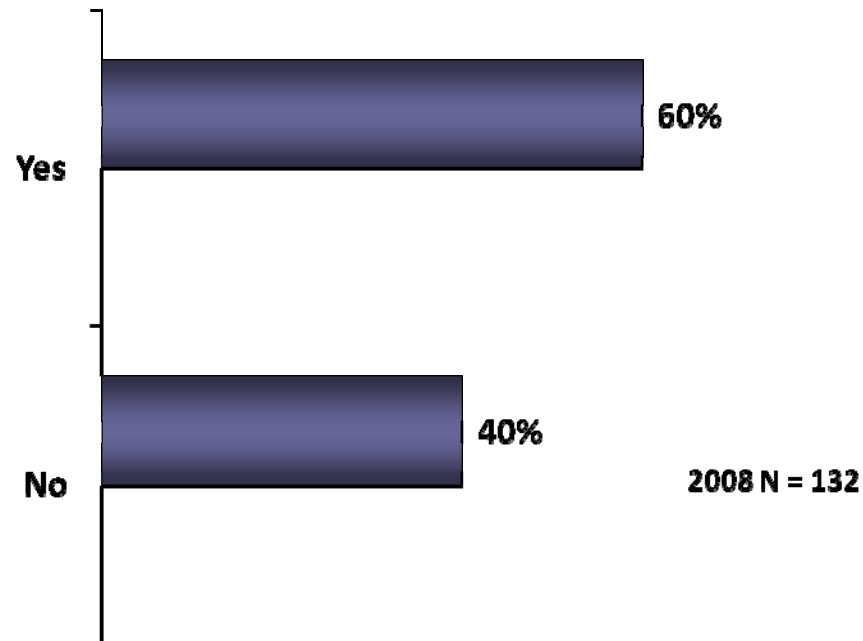
FPGAs



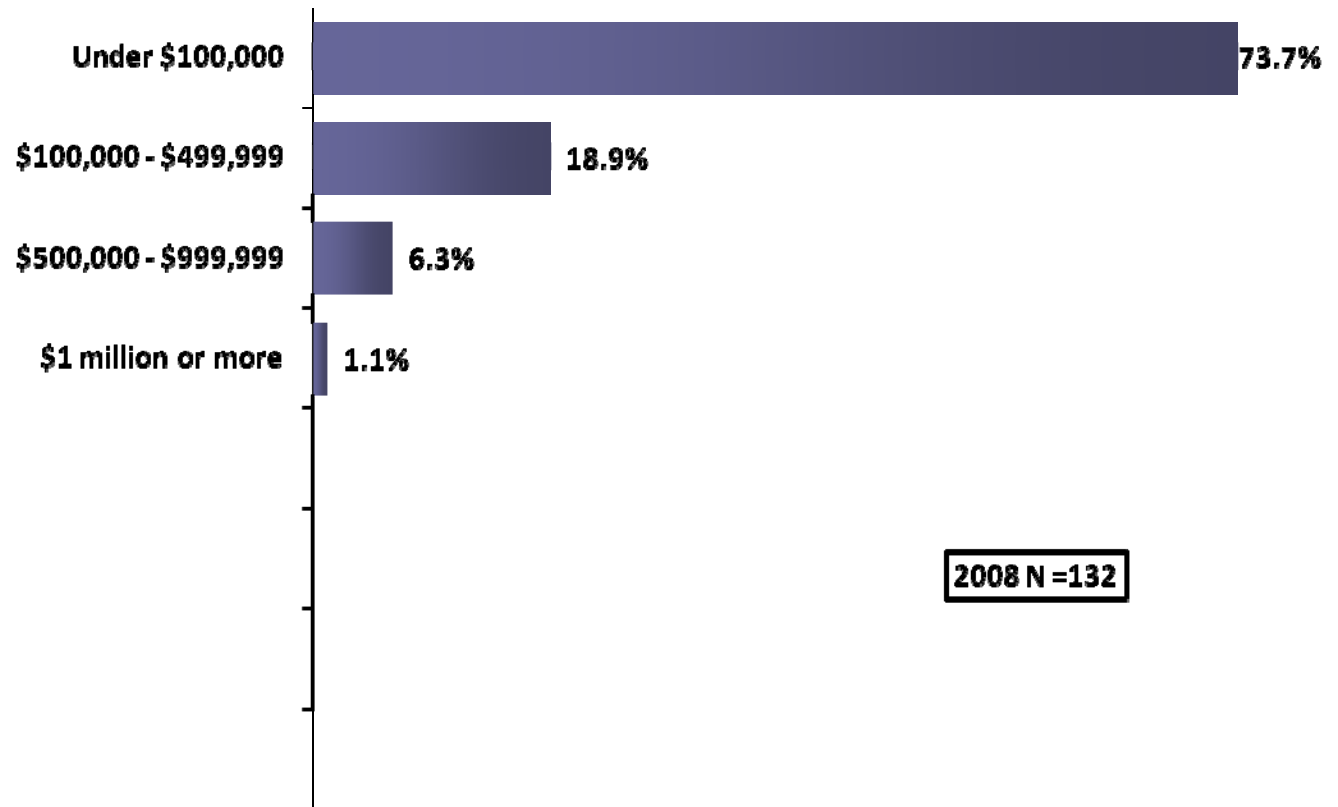
Does your organization attempt to mitigate the effects of Single Event environments?



If a rad-hard universal scrubber (method for correcting configuration faults) could be bought off-the-shelf, would your organization be interested in using this?



If a scrubber were provided to your organization, how much NRE would this save?



Summary of Findings

– FPGA Characteristics

- Speed is not an overwhelming concern – 86 percent find speed sufficient, while wish lists call for a 50 percent speedup.
- Top needs users ask from FPGA vendors, common to commercial and military, are verification (40 %), timing (30 %), management of complexity. Military users also cited lengthy design cycles in more than 20 percent of cases. Other issues were of single-digit-percentage concern.
- VHDL is still the primary design language, cited by 43.8% of commercial designers, 50.4% of mil-aero. Verilog follows, with 29.4% commercial and 21.8 military, with all other languages lagging far behind.
- Software for embedded processors is used in 73% of all designs, with EDK C/C++ favored in 70% of designs, embedded Linux in 26.3%.
- The issue of replacing ASICs with FPGA revolves primarily around time-to-market (cited by 53.2%), followed by NRE costs for ASICs (52.6%), and production volumes (46.3%), with other issues significantly back.
- Users of Xilinx and Altera tools cite floorplanning as the topic they would like the most help in..
- Simulation tools are dominated by the three versions of ModelSim, particularly SE, with NCSim a distant fourth place.
- FPGA design software is seen as adequate in many domains, but satisfactions levels are rarely above 50 percent. The level of dissatisfaction is highest in timing analysis, IC design planning, testability, hardware-assisted verification, signal-integrity analysis, power-estimation analysis, and formal verification. Well-defined problem spaces such as synthesis and routing show the highest satisfaction levels.





FPGA Mission Assurance Center

Dr. Steve Suddarth

(505) 803-2684

Director@fpgamac.com



Craig Kief

Deputy Director

DeputyDirector@fpgamac.com

Dr. Christos Christodoulou

Chief Research Officer

Christos@ece.unm.edu



FMAC Vision & Goals

- Vision

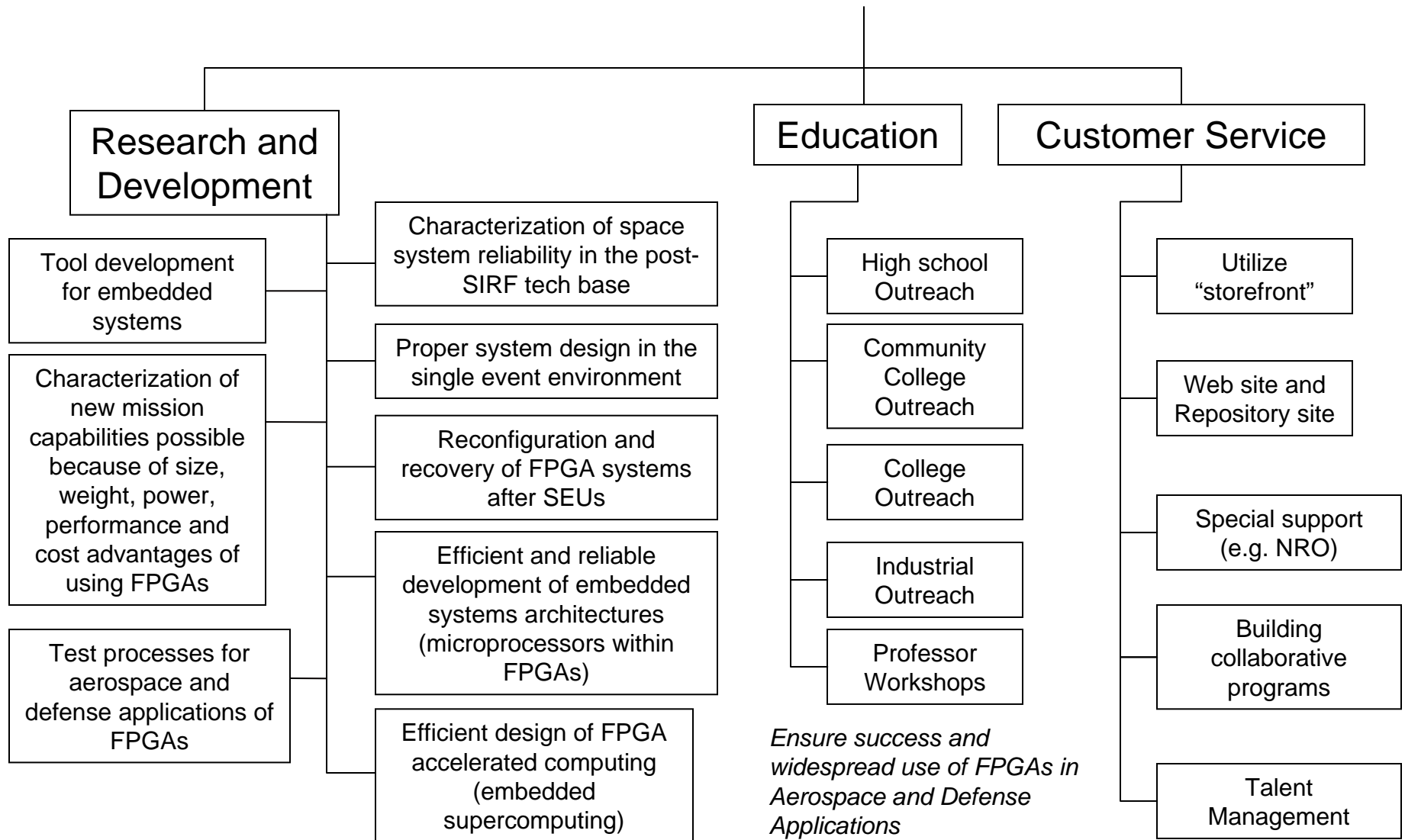
“Make Organizations Successful with Reconfigurable Logic Every Time They Seek FMAC Help”

- Goals

- Ensured success of FPGA projects
- Substantial NM business growth
- Steady flow of competent designers into workforce
- Improved design flow to speed up projects
- Advance work of the Phillips Technology Institute

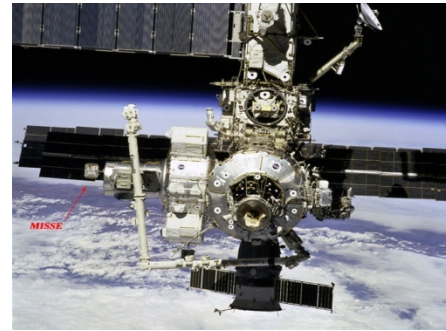


Work Breakdown Structure



Test Processes for Aerospace and Defense Applications of FPGAs

- UNM graduate student worked with Sandia National Laboratories on the Materials on the International Space Station Experiment (MISSE) Project. Some of UNM's code will be on the launched product.
- This project will place commercial FPGA outside the space station for observance to determine effects of SEU and total dosage damage.



Community College Outreach



University and College Outreach



Professor Workshops

We offer a series of free two-day workshops for professors to allow them to be able to learn the basics of establishing FPGA programs at their schools

Next one is scheduled for January 23rd and 24th

This workshop covers the basics of programmable logic, the Xilinx University Program and the Altera University Program and is sponsored by the Xilinx Corporation



Questions

