

INSIDERS' GUIDE: FPGAs, TOOLS, AND BOARDS



FEATURED INTERVIEW:

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Prepared by:

eg3.com

Jason McDonald, Senior Editor

eg3.com

tel: 510.713.2150

email: info@eg3.com

web: <http://www.eg3.com>



WIPRO: FPGA DESIGN SERVICES

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INTERVIEWEE. RAJAGOPALAN KOTHANDARAMAN,
ARCHITECT - VLSI/SYSTEM DESIGN

TEL. +91-80-28520408 EXTN 4107

EMAIL. VLSI@WIPRO.COM

COMPANY. WIPRO TECHNOLOGIES

WEB. <http://www.wipro.com/vlsi>

Q. First of all, tell us a little bit about yourself and your position at Wipro.

A. I am working in Wipro for the past 12+ years in the FPGA design and ASIC front-end design. I hold 3 US patents. I consult for multiple FPGA and ASIC/SoC development projects in Wipro, mainly in the architecture and design stages.

Q. "Design services" can mean so many different things to so many different people - from placing people at an engineering site to doing a complete design from concept to production. Can you tell us a little bit about Wipro's design service offerings?

A. Wipro is a one-stop shop for all the design service needs of a customer. Wipro has strong expertise in ASIC/ASSP/SoC development, FPGA design, board design, mechanical design, system and software design.

We have proven customer success in full chip design, turnkey SoC design from Architecture definition to physical design, Custom digital block development, Physical design and post GDS II services, Verification and Validation services, Analog and Mixed Signal design and consultation, SoC IP integration.

Specifically in the FPGA based system design, Wipro offers its design services in the following areas:

A. New product development

- Architecture Development
- FPGA Design, Implementation and Timing Closure

B. FPGA Prototyping and Validation

- FPGA to ASIC migration
- Custom FPGA prototyping/emulation board development
- FPGA prototyping for proof of concept of emerging technologies

C. Hard Copy Migration

D. Retargeting services (FPGA-to-FPGA, FPGA-to-ASIC, ASIC-to-FPGA)

E. Enhancement & Sustenance Services

Q. Our guide targets engineers and OEM managers that are specifically interested in FPGA and FPGA-based product design. What specifics can you give us about Wipro's FPGA expertise?

A. Wipro has been doing FPGA design services work for past 2 decades and has strong expertise in doing high performance high-density FPGA designs. Wipro has its own FPGA design methodology called EagleWision, which helps to ensure zero defects in the designs with robust guidelines, checklist and automated in-house tools.

Our Expertise include:

- Expertise in designing with Xilinx / Altera / Actel / Lattice Devices
- Strong Domain knowledge in vertical domains such as telecommunication, networking, wireless, avionics, automotive, industrial automation, medical, high-end computing and other embedded systems.
- High Performance High Complex Design
 - Complexity up to 6 million system gates.
 - System Performance of 200 MHz in Virtex-II FPGA
 - Optimum design using Spartan devices for low cost solution
 - Design with embedded processors such as Nios/PowerPC/8051
 - Expertise in designs involving High speed memory interfaces such as DDR2/DDR3/QDR, high speed serial interface standards like SRIO, PCIe, PON design
 - Worked with FPGA designs having high logic utilization and IO utilization (timing closure of 125-200 MHz system frequency with as much as 98% logic utilization, 100% pin utilization)
 - IP Integration
- In addition, ASIC Prototyping in FPGA (multi FPGA partitioning)

Q. What does a typical engagement look like? What is a typical project? A typical dollar size to the project? A typical time frame?

A. Wipro is a one-stop shop for all the design service needs of a customer. Wipro has strong expertise in ASIC/ASSP/SoC development, FPGA design, board design, mechanical design, system and software design. In the FPGA design space, most of the designs are mainly done as part of a large board/system development engagements. In addition, most customers have established a dedicated offshore development center (ODC) in Wipro, with dedicated pool of resources to complement customer's engineering teams. through which we do FPGA designs. Depending on the complexity of the FPGA design, the development cost is determined and it could range from \$100K to \$1M with a typical time frame of 2 months to 8 months.

To give you an example, Wipro was involved in the development of Ethernet over Passive Optical Network (EPON) system solution involving both ONT and OLT side development. The ONT system consists of 1 high density FPGA from Xilinx and OLT system consists of designing 2 high density FPGAs, one for OLT EPON stack and another for Ethernet switch function. Since the customer was time pressed to demonstrate his solution to prospective end-customers, we had to develop the systems including FPGA designs in 22 weeks with embedded software and management software. The demo went successfully right on 22nd week, resulting in our customer winning sockets for an integrated ASSP chip solution.

Q. Is Wipro a partner with Xilinx, Altera, or other FPGA providers? What sorts of partnerships are you involved with that support FPGA-based designs?

A. We have strong partnerships with Xilinx, Altera and Actel that ensure tier 1 technical support, access to factory for resolving critical problems, advanced training and certification, sharing roadmap and joint business promotion. We are part of Xilinx Alliance Program. We are the largest design service company in Altera's Certified Design Center (CDC) program with more than 165 Altera certified engineers. We have forged an alliance with Actel mainly for Avionics designs.

Q. Does Wipro offer special expertise in specific vertical markets like military or telecommunications? What verticals do you think have the most applicability to FPGA-based designs, and how can Wipro "help" with designs for these verticals?

A. Most high performance high density FPGAs find use in telecommunication and networking systems. Wipro has a strong domain expertise in this space, working with almost all the top-ten telecom/datacom system vendors for more than 2 decades. In addition, Wipro's delivery teams are vertically aligned having greater domain expertise in the areas of medical, storage, avionics, industrial automation and embedded systems. Specific to avionic designs, our hardware/FPGA development processes are fine-tuned for DO-254 design assurance levels.

Q. How does an engineering manager know who he is going to deal with? Does he meet with specific engineers at Wipro? Is there a stable "team" assigned to a particular project?

A. Our customers come to Wipro with a confidence of assured project delivery with highest quality standards with greater cost control. He gives the concept specification of his product and works jointly with Wipro team to define the architecture. Our customers trust Wipro with the project and Wipro manager is given a free hand to form the project team based on the expertise needed to successfully deliver the product. Wipro manager and project lead communicate with customer regularly (weekly/fortnightly) through telecons/videocons / detailed weekly status reports. There may be joint milestone reviews. Additionally there will be quarterly management business reviews.

Q. It's very hard to begin a new design service relationship. What ways can you suggest a potential client educate himself about Wipro before having to make a substantial financial commitment? Are there site visits? Webinars? Online learning?

A. Anyone interested can visit our website <http://www.wipro.com/vlsi> or write to us directly at vlsi@wipro.com for a service specific e- brochure. You can also mail us for any specific queries and our Business managers or Sales/Marketing has presence in that Geo will get in touch.

Q. Thank you for this interview.