

# INSIDERS' GUIDE: FPGAs, TOOLS, AND BOARDS



## FEATURED INTERVIEW:

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## TATA ELXSI: FPGA DESIGN SERVICES

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

A. My name is K.Ganesh Rao. I hold an M.Tech degree from NITK, Suratkal. At present, I am a Project Manager – Semicon& Systems. My areas of interest are FPGA and Board designs systems.

I have been associated with TATA Elxsi for more than a decade now.

**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 Tata Elxsi’s design service offerings?**

A. TATA Elxsi offers services across life cycle of an ASIC design to ensure first time right ‘paper to wafer’ solution. Semiconductor & System design services involve SoC design, FPGA, Verification & validation, Analog and Mixed signal chip design and Hardware board design.

Moving well beyond simple labor cost arbitrage, TATA Elxsi is working with customers in offering integrated product development for hardware and software, rather than point services.

Our Semiconductor / board design practice involves design right from system specification, hardware/software partitioning, to design/layout/testing and manufacturing support for production rollout.

Being one of the frontline design services company, we understand our customer needs and pain areas. Our various engagement models coupled with IP licensing have helped us to enable and accelerate our customers’ time to market. Engagement models could be conventional T&M, Fixed cost contract, Off-shore/Near-shore development centers or hybrid models customized for the customer.

**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 Tata Elxsi’s FPGA expertise?**

A. FPGA Design has been an integral part of Semicon & Systems division of TATA Elxsi, right from the inception. In a nutshell, our expertises on FPGA design can be classified as:

- FPGA design and synthesis for custom specifications
- Hardware Acceleration engines for software implementations of protocols
- Glue logic development and synthesis in FPGAs for system designs

- Rapid prototyping of ASIC/SoC in FPGAs
- Translation services
- FPGA – FPGA
- FPGA – ASIC
- ASIC – FPGA

As far as FPGA-based product designs are concerned, work-in-progress covers a wide range of products, including communication and multimedia products in the CE space, high-end equipment such as automotive electronics and telecom infrastructure products technologies like 3G, WiMAX, LTE etc

**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. We collaborate with our customers at various levels and stages. The engagement could be RFP based services with business models like T&M, Fixed or Hybrid models or strategic partnerships with Off-shore Competency centers which is a seamless extension of customer's engineering center. Most of our engagements fall in the latter category. We also extend on-site support through resource augmentation.

We work on areas like VLSI, Telecom, Embedded Software, Networking, Multimedia, Storage, Automotive, Visual and High performance computing. We also have probably India's biggest Industrial design center for Concept creation and mechanical engineering designs. Most projects can be categorized under these heads. Also, because of end-to-end product design expertise, many of the projects are for complete product development. As a case in point, we are engaged with World's leading Industrial Automation Company for whom the complete DTV product is being designed and developed by Tata Elxsi. A network processor being developed for the purpose is also being designed by Tata Elxsi.

Delivering quality and value to our customers is the foremost in any engagement. That doesn't mean order value is any less important however, it's not the ultimate decider. Our engagements could be as small as 100k Dollars to a few million dollars worth.

The time frame of a project is very subjective. Sticking my neck out, I would say for a FPGA based product design it would be anywhere between 12 to 18 months but it all depends on the application of the product.

**Q. Is Tata Elxsi 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 entered into strategic alliances with leading technology companies across the globe in order to give further depth to our offerings to our customers. Working with us gives our customers the opportunity to make use of these alliances and partnerships to receive better services, making use of the best technology and our own expertise.

Tata Elxsi is a proud part of Xilinx Alliance Program.

As a part of Xilinx Alliance program, Tata Elxsi has developed several solutions that digital display designers can use to accelerate the development of complex image enhancement algorithms in high-quality flat-panel displays. The reference designs are proven on a Spartan™-3 based validation platform developed specifically to address key technical challenges faced by LCD and PDP television panel and video board designers.

Tata Elxsi is also an Altera Certified Design Center. We have expertise in designing complex solutions on Altera platforms and many of our engineers are Altera-certified design engineers.

Being the earliest ARM approved design center and Tensilica's first authorized Processor design center, we bring in the highest level of technical design competency to our customers.

**Q. Does Tata Elxsi 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 Tata Elxsi "help" with designs for these verticals?**

A. All along, niche focus has been our differentiator. Telecommunications and Consumer electronics are the verticals where we bring in value with our several man-years of experience.

For Consumer electronics, we have built an Image processing SOC on Xtensa processors for one of the world's leading consumer electronics giants.

As part of our IP initiative, Wave 1 compliant PHY solution for WiMAX application is developed by us. The solution flexible to be adopted for macro, micro and pico base stations is implemented and tested on Xilinx Virtex 4 FPGA.

Video Conferencing gateways, 3G communication platforms, H.264, AVC –Intra are some of the other notable FPGA-based designs developed by Tata Elxsi.

Communications, Industrial and Consumer electronics are the verticals, which I think, have the most applicability to FPGA –based designs.

As the FPGA moves towards 65nm process technology, power consumption becomes the main consideration. Also, increased complexity has made the design software a critical part of FPGA.

By virtue of our vast experience and for the fact that we operate out of India helps us to deliver low cost solutions to not just these markets but also our customers as a whole.

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

A. We understand that by entrusting a mission critical project, the least that our customer could expect from us is transparency. Based on the type of projects, almost always the brief profiles of the personnel identified by Tata Elxsi for the purpose would be shared with our customers. The identified key technologists would be available for discussion with the customer at any given point of time. The meetings could happen over conference calls, video conferencing or meeting in person.

Right from the time the RFP is received from a customer, a team of key technologists would be identified. This team would be responsible for interacting with the prospect, understanding the nature and scope of work and to propose the best possible solution. The same team would be working on the project upon signing of the contract. In that sense, our customer could be rest assured that there wont be upheavals as regard to communication channels with Tata Elxsi.

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

A. Tata Elxsi is a part of TATA group, the biggest and oldest Indian conglomerate. As a part of TATA group, it's been our legacy to build business by building trust.

Our regularly updated website <http://www.tataelxsi.com/> gives out a lot of information and news about who we are and what we do. Even the latest audited financial results are available on the website.

At Tata Elxsi, 'seeing is believing'. So, site visits are very common. Apart from site visits, RFI response and online learning, a dedicated account manager would make sure that all our customer queries are satisfactorily answered.

**Q. Thank you for this interview.**