fidus
innovate·design·deliver

FPGA Design

UTILIZE OUR EXTENSIVE EXPERIENCE IN FPGA DESIGN FROM LOW-COST CPLDS RIGHT UP TO THE LARGEST FPGAS IN THE WORLD.

Your teams are facing unique challenges, and we understand — too many projects and too few engineering resources. And that's not all. Designing for your complex prototype or product requires deep technical knowledge as well as thoughtful consideration and planning. Bottom line, you need to meet your roadmap schedule, and with Fidus as an extension of your team, you will get there, and get it right the first time.

HOW WE HELP

Delivering solutions at the speed of your business.

After more than 20 years, 3,000 projects and 400 customers, we've learned how to transform your idea, vision or concept into the product you've imagined. That's because we know how to take complex problems, and design and deliver them against dynamic environments and tight deadlines.
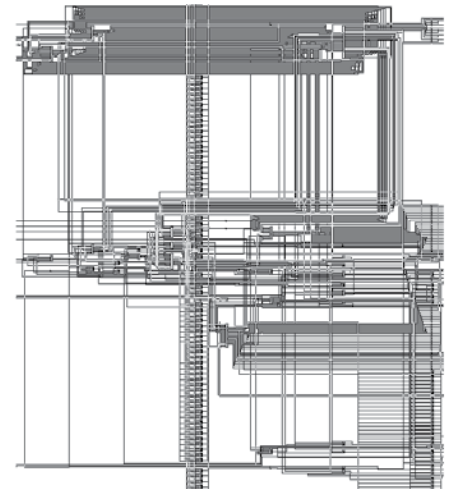
Your project needs the right team and the right toolset with a rigorous process to deliver on your capability and capacity challenges. At Fidus, we become a seamless extension of your team, with a clear focus and commitment to getting your design or prototype to market faster.

Being a Gold Intel® Partner Alliance member means that we are trained and adept at selecting and implementing the most advanced Intel devices and tool flows. And since Fidus attracts a variety of industries and customers, our teams have cultivated creative problem solving, ensuring projects are efficiently planned and cost effective.

That's not all! Our FPGA design teams' skills are well complemented by our hardware, PCB layout, signal integrity, embedded software, and mechanical design expertise.

Extend your team — you choose how we work together.

Design projects have many elements, all of which are in your control when you work with Fidus. Do you want to hand off the whole project or just find a few people to supplement your staff? Looking for project management to keep you informed and the project on track? Our breadth of expertise, creative team structures, and flexible payment options allow a customized service that works for you:

- **Turnkey design services:** Plan and execute with our team for an end-to-end development solution, or choose anything in between to suit your requirements.
- **Staffing services:** Utilize a design expert at your virtual or physical location, for the length of your project, or for a targeted engagement.

intel.

Intel® Partner Alliance
Gold Partner

DESIGN EXPERTISE

Turnkey: FPGA design, verification, and documentation solutions

Device selection: Identifying the best device to get the job done

Device retarget: Helping you migrate from one FPGA to another

Languages: Verilog®, VHDL, SystemVerilog, HLS, SystemC

Intel PSG advanced tool flows: Intel® Quartus® Prime Design Software, Intel® HLS Compiler, DSP Builder for FPGAs, Intel® SoC Embedded Development Suite, Nios® II Embedded Design Suite, SDK for Open CL

ASIC-to-FPGA conversion: Replacing low-volume or discontinued ASICs with low cost FPGAs

ASIC prototyping in FPGAs: De-risking ASIC developments by first implementing the design in one or multiple FPGAs

High performance computing: Tensor Processing Unit, ML, AR/VR, workload acceleration, CPU offload

Multi-gigabit serial links: PCIe® Gen4, JESD204, Aurora

Memory/storage interfaces: NVMe, HBM, DDR4, SRAM, LPDDR, etc.

Communication protocols: OTN, eCPRI™/CPRI™, TCP/IP, Ethernet, SONET/SDH, ATM, Aurora

Digital signal processing (DSP): Software defined radio (SDR), filters, echo-cancellation, 802.11 a/b/g wireless LAN, MATLAB and Simulink algorithm desing,verification, and conversion to HDL, video processing (e.g. warping, de-skew, rotations, etc.)

Video: 12G-SDI, DP, MIPI, HDMI, HDCP, image enhancement, scaling, overlay, PiP, soft-core processor engine with DMA interfaces, 4kDCI/UHD and beyond, HPS-FPGA bridging, image sensor interacing and ISPs etc.

Experience with: MAX, Cyclone®, Arria®, Stratix®, Agilex™, including SoC variants

TOOLS FOR HIGH-END DEVELOPMENT

Intel®: Quartus Prime, HLS Compiler, SoC Embedded Development, Nios II

Embedded: Intel® SoC Embedded Development Suite, Nios® II Embedded Design Suite

Simulation/code coverage: Intel® FPGA Edition Software, Intel® Advanced Link Analyzer

Synthesis: Synplify Pro®, Synopsys Design Compiler®

Lab tools: Programming pods, logic analyzer

Verification: For smaller designs we mostly verify with targeted testbenches. For larger or critical application designs, Fidus offers an ASIC-like verification practive through UVM

EXAMPLES OF OUR WORK

- 5G, O-RAN fronthaul gateway, O-RAN IP development, integration and verification support.
- Agilex-based production test platform, featuring an RTOS for real-time system control requirements.
- ASIC emulation featuring PCIe bifurcation, highly parallel DSP design and processing.
- Logic analyzer/oscilloscope application featuring JESD204B, NIOS-II, DDR3L, transceivers.
- VME SDR airborne search and rescue radar system featuring a MATLAB to VHDL flow.
- PCIe add-in card implementation with accompanying host side Linux driver.
- Video MIPI DSI input to MIPI DSI with low latency processing unit for VR application.
- Video over ethernet encoder/decoder platform, featuring JPEG2000.
- Video protocol conversions between SDI, DP, HDMI, MIPI.
- Video HDCP core development and integration.
- Encryption algorithms on SoC featuring asymmetric multi-processing and generated through HLS.
- EPON ONU development.
- Verification of multiple designs using UVM and an ASIC-like mentality.
- Various transceiver designs, 32Gbps+.
- **One stop shop** — Intel® FPGA and SoC designs paired with hardware, software, and signal integrity to get you to market fast!

BRINGING YOU INTEL PSG PARTNERSHIP

As a Gold Intel® Alliance Partner, Fidus receives exclusive training, certification, and early-access to tools, IP, and new silicon. So what does this mean? It means that when you hire Fidus, you know that Fidus is on the forefront of the Intel roadmap, experienced in the most advanced tool flows, and is top of mind within the Intel PSG support network.

DESIGN SOLUTIONS WITH FIDUS
Need prototype and product design help?

We'll work with you to understand what you're looking for, and we'll dedicate the necessary resources to make sure it's a success the first time. Come to us with just an idea or specific challenges that are keeping you up at night, and we'll help you solve them.

Fueled by 20+ years' experience, our expertise, and creativity, along with our collaborative and process driven approach, turns complex challenges into well-designed solutions, and we keep customers like you coming back, again and again:

1. We are committed to "first time right."
2. Experience has taught us how to solve problems on any scale.
3. Faster time to market means faster time to benefit.
4. You choose how we work together.
5. Unique projects are our obsession.
6. We believe transparency builds trust.
7. Customer focus is our calling card.

20+
years experience

Collaborating with smart teams is what fuels us every day.

3,000+
successful projects

Your unique challenges are our obsession.

400+
customers

Extending your team with our expertise brings designs to market faster.

95%
repeat customers

Customers love to work with us, again and again.

ABOUT FIDUS

Fidus Systems, founded in 2001, specializes in leading-edge electronic product development with offices in Ottawa and Waterloo, Ontario, and San Jose, California. Our hardware, software, FPGA, verification, wireless, mechanical and signal integrity teams work to innovate, design and deliver next-generation products for customers in emerging technology markets. Fueled by 20+ years' experience and creativity, along with our collaborative and process driven approach, we turn complex challenges into well-designed solutions. And with over 400 customers and 3000+ completed projects, we have the expertise to be a seamless extension of your team, providing a clear focus and commitment to getting designs and prototypes to market faster. Once you start working with us, you'll trust us like one of your own. Our hallmark is transparency. Our guiding principle is first time right.

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