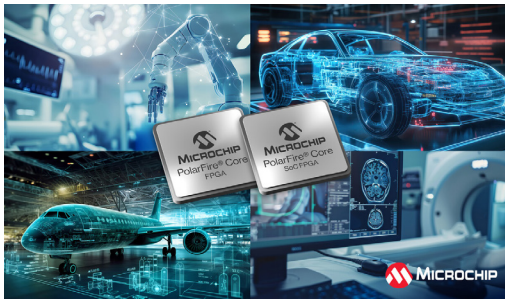
fidus
innovate•design•deliver

FPGA Design

SECURE. LOW-POWER. PERFORMANCE-DRIVEN.

At Fidus Systems, we deliver advanced design services using Microchip's PolarFire® and PolarFire® SoC platforms — bringing secure, low-power solutions to life in aerospace, medical, industrial, and defense applications. As a **formal design partner**, we gain early access to silicon, tools, and technical support, enabling our clients to get to market faster with reduced risk.



Fidus provides full product development or targeted engagements, with services spanning FPGA/SoC design, embedded software, board-level design, validation, and regulatory-ready delivery.

With over **4,000 successful projects** and design centers in **Ottawa**, **Kitchener-Waterloo**, **and San Jose**, we are a trusted partner for FPGA innovation across North America.

HOW WE HELP

- Accelerate the development of embedded vision, robotics, and edge compute platforms
- Migrate from legacy FPGAs to Microchip's secure, low-power PolarFire® devices
- Deploy hardened RISC-V SoCs with Linux or real-time embedded firmware
- Integrate secure boot, SEU-immune configuration, and encrypted data pipelines
- Provide full-stack design: FPGA logic, firmware, SI/PI, validation, and layout

DESIGN EXPERTISE

Turnkey solutions: End-to-end FPGA and SoC design, embedded software, validation, and documentation

Device selection & migration: Expertise in PolarFire®, PolarFire® SoC, SmartFusion®2, and IGLOO®2 — with support for smooth migration from legacy platforms

Languages & tools: Verilog®, VHDL, SystemVerilog, UVM Libero® SoC, SmartDebug, SoftConsole, VectorBlox™ SDK

Security-focused: TeraFire® Crypto Engine, secure boot, tamper resistance, bitstream encryption, SEU-immune logic

Embedded vision & edge processing: MIPI CSI/DSI, HDMI®, SLVS-EC, CoaXPress®, AI/ML inference using VectorBlox™

Real-time embedded software: Linux BSP, RTOS, bare-metal firmware for RISC-V, custom driver development

TOOLS FOR DEVELOPMENT

- Libero® SoC Design Suite
- SmartDebug
- SoftConsole
- HLS Compiler
- VectorBlox™ Accelerator SDK

INDUSTRY FOCUS

- **Aerospace & defense:** Secure comms, anti-tamper, airborne data
- **Space:** SEU-immune architecture, DDR tuning, thermal design
- **Medical devices:** Low-power video transport, diagnostics
- **Industrial vision & robotics:** Embedded AI, SLVS-EC, real-time motion control
- **Autonomous systems:** Sensor fusion, control logic, secure connectivity

SAMPLE MICROCHIP PROJECTS

Industrial Line-Scan Camera

- **Platform:** PolarFire® FPGA
- **Scope:** Developed FPGA interface, sensor board, and optics calibration system
- **Impact:** Enabled high-speed industrial imaging with long-term partnership support

Synthetic Aperture Radar Onboard Processor

- **Platform:** PolarFire® SoC
- **Scope:** Designed and delivered FPGA and processor board for high-speed radar processing
- **Impact:** Delivered space-grade DDR, SI/PI, and embedded control for on-orbit mission

Airborne Data Acquisition Platform

- **Platform:** PolarFire® SoC MPFS250T
- **Scope:** Migrated legacy I/O system to SoC-based platform with custom VHDL IP and verification
- **Impact:** Delivered secure airborne-ready recorder in just 14 weeks

IP, INTERFACES, & CAPABILITIES

AREA	SUPPORTED FEATURES
Interfaces	PCIe® Gen4, 10G/25G Ethernet, USXGMII, CoaXPress®, SLVS-EC, HDMI®, DisplayPort™, MIPI CSI-2/DSI
Memory	DDR3/4, LPDDR4, QSPI, NVMe™
Video & Imaging	4K60 pipelines, scaling, overlays, color space conversion
Security	Secure boot, bitstream encryption, DPA resistance
AI/ML Acceleration	VectorBlox™ SDK for edge inference
Embedded Systems	Linux, RTOS, AMP, TSN, ROS2

FPGA MICROCHIP DESIGN PARTNER

MICROCHIP

MICROCHIP PARTNERSHIP

Distinguished as a Premier Design Services Partner, Fidus Systems is uniquely trained, qualified, and supported to provide electronic product development and consulting services for Microchip customers across a wide range of industries. Fidus specializes in high-speed, high complexity designs involving Hardware, FPGA, Signal Integrity, Embedded Software, Verification, PCB Layout, Wireless, DSP, and Mechanical design.

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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