



Flexible and short time-to-market with ASIC design quality!

Field Programmable Gate Arrays (FPGA) are an excellent alternative to an Application Specific Integrated Circuit (ASIC) in many circumstances. Whereas an ASIC contains hard-coded logic and analog functions, an FPGA is designed to be configured after it has been manufactured. In other words, field programmable!

Modern FPGAs offer high amounts of configurable logic, internal memory, various compute engines, including DSPs and CPUs, and massive interface bandwidth. This enables a wide array of device functions, for example: data, image and signal processing, video analytics and compression, protocol conversion, sophisticated packet processing, machine learning applications, and many more.

“We provide a solution for companies that desire the quality attributes of an ASIC for which the intended sales volume does not justify the tremendous investment in an ASIC”

Electronic equipment that make use of FPGAs offer the following advantages:

- Reduces the overall number of integrated circuits (ASICs) required to create the overall desired functionality.
- Eliminates the time and costs associated with the design, development and lengthy fabrication process of a bespoke proprietary ASIC.
- Provides flexibility after manufacturing to accept changes, for example new features.
- Facilitates the opportunity to combine memory and logic to emulate built-in microprocessor.
- Saves space compared to multiple ASICs and the associated PCB routing.

In the early days of FPGA, the configuration was created using a low-level hardware description language, however more recently higher-level design software, modeling and simulation tools, and automation techniques are used to avoid tedious and error-prone manual programming.

AimValley FPGA Design Expertise

■ Multi-vendor Capability

AimValley has a dedicated team with a long and rich experience working with several brands of FPGA including those of the big two, namely AMD and Intel (former Altera) plus experience working with others including Lattice and Microsemi. Our skilled Engineers are equipped and familiar with the tools, such as VHDL, Verilog, Matlab, UVM, and the FPGA supplier specific development environments.

■ Library of Intellectual Property

Many companies can design FPGA circuitry. AimValley offers additional value due to our 18-year history of developing FPGA solutions in telecom transport. On behalf of our customers we leverage intellectual blocks to support Custom Design Services. Our expert level legacy telecom services include TDM, SONET/SDH, OTN, CPRI, High Speed Ethernet, TDM over Packet, CES, switching, synchronization and much more. Specific expertise in critical path synchronization, timing and controlled ultra low latency in telecom/packet communications, including digital and hybrid clock recovery.

■ Efficient Development

The cost of design services is directly and proportionally related to the Engineering hours spent on any given project. AimValley has developed Automated tools to efficiently speed up verification and test and to ensure reliability and quality. Automated tools beyond FPGA register automation also for automated API generation. This saves time while improving reliability and eases change management.

■ Projects Large or Small

There are many sizes of FPGA devices, each having different levels of capability and complexity. We have worked on very simple designs right up to the most complex and highest speed FPGA devices.

■ Comprehensive Verification

Unlike some other design houses, AimValley does not apply a casual approach to FPGA code. While it is true that FPGA code can be updated in the field through a version upgrade, that should not be an excuse for releasing immature code with unproven performance, sub-optimal reliability, and perhaps errors. For these reasons AimValley has adopted a process and workflow for FPGA development that is of the level of ASIC testing and verification. This not only includes a disciplined approach to design but a verification and test process that includes the introduction of scenario simulation, testing at scale, testing at limits of performance, and power cycle testing. Such rigor has been proven multiple times to vastly reduce product issues once products are put into service with end customers.

■ ASIC prototyping with FPGA

Using its proven high-quality design tools and comprehensive verification methodologies, AimValley is trusted to do ASIC prototyping to verify circuitry prior to ASIC fab and to prove out reusable FPGA blocks.

■ Additional Strengths of AimValley Regarding FPGA

Regardless of the geographic locations AimValley is adept at remote working and adapting to the customer process and methods of working.

FPGA References

[AMD](#)

[Intel](#)

[Lattice](#)

[Microsemi](#)

AimValley proven track record

A Trusted Partner for Your Success

AimValley is often brought in early in development cycles by major electronic product and system companies to take advantage of our experience-based FPGA size/performance estimations leading to rightsizing of the FPGA based on the best selection from multiple FPGA vendors.

This is highly effective to control and optimize costs versus performance, choose the correct device, and to predict feasibility and development timelines.

Engaging AimValley for FPGA work avoids expensive rework, and delivers designs on time, on budget with correct performances.

AimValley = no surprises.

Project Examples & Design Briefs

- [FPGA Packet Processing](#)
- [FPGA Obsolescence Redesigns](#)
- [SONET/SDH & TDM FPGA](#)
- [Ultra Low Latency](#)
- [Bare Die FPGA](#)
- [Bluetooth ASIC](#)

Why AimValley?

AimValley is a reliable provider of FPGA Design Technology since 2003, delivering solutions for:

- High speed data processing applications
- Complex FPGA-based accelerated systems
- High speed, low power hardware equipment
- Robust embedded software
- Early adopter of Acceleration Technology

AimValley understands the full complexities as well as the subtle nuances of designing great edge solutions. We excel in building complex systems that are part of your product in the fields of Telecom, Industry 4.0, Healthcare and Transportation markets. Our combined skills represent all the important aspects required for the development of end-to-end systems. Our customers enjoy the benefits of working with a strong team with over 2000 years engineering experience.

AimValley is a trusted partner of Tier 1 customers.

Quality Focus

- Outstanding track record of on-time delivery
- Best in Class Designs – Time, Budget & Quality
- ISO9001, ISO14001, EcoVadis top 2% CSR Rating