

## Compact GigE interface for Machine Vision cameras

Machine Vision is a key enabler for digital transformation of the manufacturing industry. In their continuous search for faster production lines, higher quality and reduction of human error, many system integrators are looking for camera solutions and automatic image processing technology.

Whether the systems are based on traditional computer vision concepts, or enhanced with machine learning to recognize patterns in challenging conditions, the camera signals often need to be transported via a network for processing at a central location.

For example, to aggregate and correlate images with other sensing sources, or to stitch multi-angle views together to create a 3D view of the object.

IP networks are widely available, they easily support aggregation network topologies and provide ample capacity to transport camera signals. When Power over Ethernet is available, the same cable can be used for data and power to the camera.

### **AimValley Expertise on Streaming Network Interfaces**

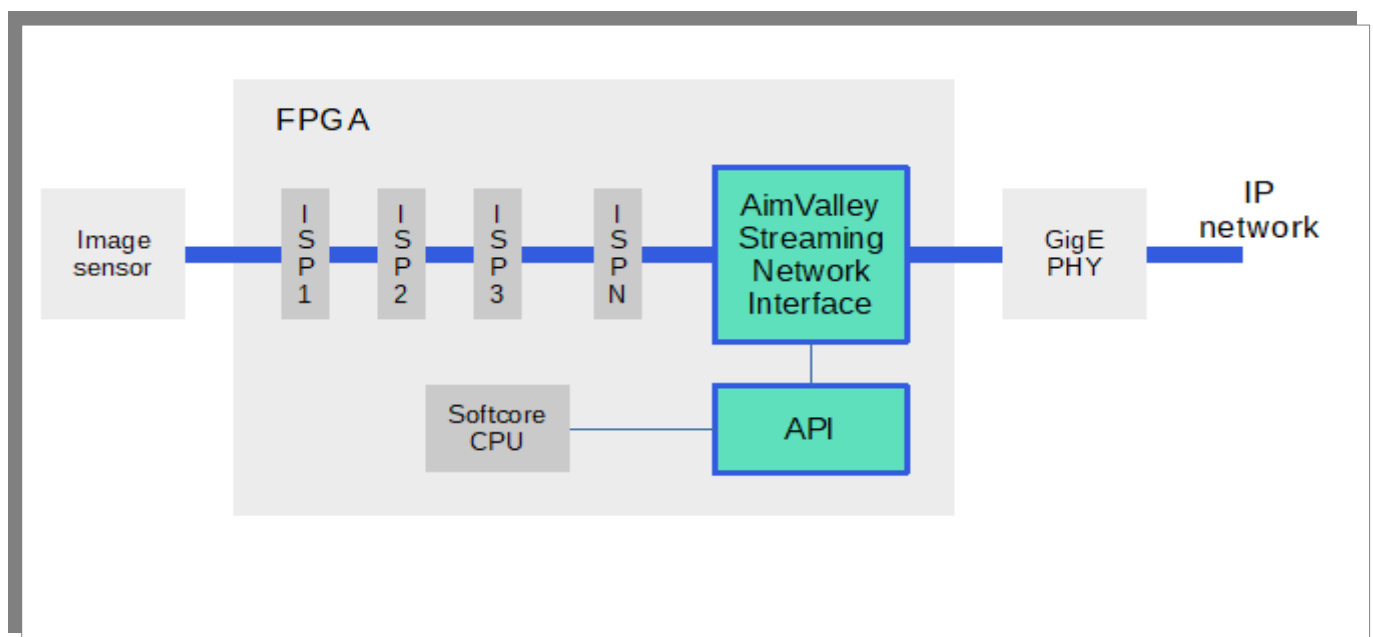
AimValley is an expert on FPGA designs for connectivity solutions, including Ethernet and IP protocols, combined with timestamping and network wide synchronization. In addition, we specialize in solutions that transport serial protocols such as TDM or SONET/SDH over Packet Networks. Our designs support Mbit/s up to 100s of Gbit/s, with various protocol layers supported, including PHY, PCS and MAC, providing IP, MPLS or Ethernet protocols.

Our solution for camera streaming over networks implements a GigE UDP/IP/Ethernet encapsulation function, and provides a direct interface for the machine vision pipeline to connect to a wide range of image sensors and a large set of image processing IP.

The camera network interface is optimized for small footprint and ultra low latency.

## Streaming network interface functionalities

- Support for all sizes of sensors, frame rates and pixel formats up to full GigE bandwidth
- Flexible Ethernet packet size up to Jumbo frames of 9000 bytes
- Optimized for ultra low latency; less than 1 us can be achieved depending on sensor and settings
- Flexible architecture to allow for customization
- GMII for interfacing to external GigE PHY chip
- Wishbone control bus for interfacing with embedded processor
- Soft logic CPU core for custom or differentiating functionalities such a camera control channel
- Sensor interface for uncompressed 720p60 or 1080p25
- API support for easy integration of the network interface in software applications



## AimValley Proven Track Record

AimValley partners with Helion, provider of a comprehensive set of Image Signal Processing (ISP) libraries, supporting end-to-end solutions from sensor interfacing to displayable images.

AimValley's compact streaming GigE network interface is part of the Helion IONOS IP suite. A ready-to-use example application, based on the Lattice HDR-60 Camera Development Kit, is available for evaluation of various ISP and network configurations, and various comprehensive test projects enable solution developers a fast time-to-market.

## Why AimValley?

AimValley is a reliable provider of Video Streaming 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 is a trusted partner of Tier 1 customers in Telecom and Industrial markets. Our customers enjoy the benefits of working with a strong team with more than 2 000 years engineering experience. Our combined skills represent all the important aspects required for developing end-to-end systems.