



## When Real-Time Software Apps hit a Performance Wall

There is no question that micro-processors have been gaining huge amounts of both capacity and performance ever since their invention, essentially even outpacing Moore's Law of computing. Microprocessors, when equipped with the correct software code, highly optimized environments including multiple-cores, GPUs, memory, pipelined communications interfaces, etc. are currently doing many things in software today that could only be imagined in hardware just a few years ago.

One of the best examples of such advancement is the current transformations of telecommunications networks where cellular radios are now largely Software Defined Radios (SDR) and/or Software Defined Networks (SDN) and where high speed ethernet networks are being converted from bespoke and proprietary network elements (hardware) to Commercial Off the Shelf (COTS) servers in their place. Interestingly, for every advancement in computing and the use of data comes higher speed and higher performance driven applications.

For example, in telecommunications networks we have seen data rates steadily climb from 64 Kilobits per second to "Megabit per second, to 100 Megabit per second, to Gigabit per second, to 100 Gigabit per second, to the currently deployed 800 Gigabit per second.

The same is true for consumer televisions and video, that is currently at 8K UHD TV, and on-board automotive computers for autonomous driving that are dealing with Terabytes of data collection and processing.

In most products and applications it is paramount for the solution designers to choose the optimal combination of computing power commensurate with the speed and capacity required for the foreseen applications. Not enough compute power leads to under achievements in performance. Too much computing in real time massive data streams can lead to higher costs, more power drain, and more heat to deal with.

There are many cases where software engineers attempt to optimize their code to improve performance or increase capacity. This can become a frustrating process where new software loads only add very little gain in capacity while becoming exponentially harder to achieve. In other words software designers hit a performance wall.

AimValley offers up-front systems feasibility that considers the overall performance of the intended hardware versus the required performance requirements of the applications. Getting this defined up front and applying the correct balance between hardware, software and code that will run in FPGA's will bring better solutions to market faster, often at a lower cost.

## Why AimValley?

AimValley is a reliable provider of Edge 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

## Joint Development

Achieving your goals requires you to constantly adapt to new technologies. Based on your requirements, we design solutions and ways to jointly implement them.

## Tailor-made Solutions

We collaborate with you to deliver your desired solution (complete product or only part of the development).

## Fast-Track Development

Taking advantage of re-usable designs and IP enables us to develop your solution on a fast track.

## Innovative Solutions

AimValley is continuously looking for alternative and optimized ways of designing high-tech products. We have an extensive patent library.

## Phased Approach

Our design process is structured to successfully take your product from concept to production and flexible enough to allow you to leverage any of our services on a standalone basis.

## Certification

AimValley is experienced in certifying products or systems, such as EMC/ESD, CB and CE.

## Life Cycle Management

We offer life cycle management for the design and/or the product. This includes maintenance and component obsolescence management.

## Quality Focus

- Outstanding track record of on-time delivery
- Best in Class Designs – Time, Budget & Quality
- ISO9001, ISO140001, Ecovadis Platinum CSR