



AimValley is a world-class engineering and innovation center that designs and builds networking solutions. We are based in Hilversum, with colleagues in Canada, India and France. We started in 2003 as a spin-off from Lucent Technologies (a successor from the American company AT&T), which is why we have a strong background in telecommunication solutions and have built-up a vast expertise in real-time processor technology. Our telecom experience creates a perfect crossover to the HealthTech sector, where we are establishing our footprint, through developing innovative connectivity solutions for medical device manufacturers. Most of our design & development is done in-house.

Product development entails the preparation of requirements documents, specifications of system architecture, electronic development (board design, system certification, mechanical design), FPGA/ASIC & software development, system verification, and product/factory introduction. AimValley uses FPGAs to process high-speed transmission functions. Real-time requirements are key in our software development.

Our business is about people and our teams are dynamic, skilled and passionate about technology. Recruiting and training the right talent is an essential part of the AimValley DNA. We have over 95 employees of which 75% work as a design expert in the R&D organization. All R&D employees have a college or university-level education.

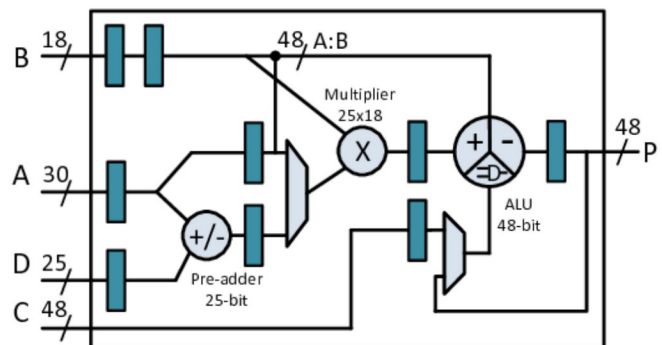


Project Introduction - Alternative Usage FPGA DSPs

FPGAs contain various low-level elements which can be used to implement the required functionality. One of them are DSP elements. They are focusing on arithmetic functions often used for digital signal processing. In designs from Aimvalley these elements typically are not used. However FPGAs contain a fixed amount of any basic element and therefore not using DSP elements directly means they are wasted. DSP elements itself contain several sub-components like flip-flops, muxes, adders, multipliers and bitshifters. The DSPs are less configurable as the logic part of the FPGA but can run on higher frequencies. Due to the fact that DSPs are less flexible, FPGA synthesis tools do not recognize constructions in source-code of AimValley designs which it is capable of mapping into DSP elements. Rewriting source-code into functionally equivalent variants might enable DSP element recognition by FPGA tools.

Project Description

The assignment is to investigate alternative functions which can be implemented using DSPs instead of traditional FPGA logic resources. The implementations need to be compared to equivalent implementations in traditional FPGA logic. Focusing on resource usage reduction and performance. Also how to infer them in the source code of the design and make them technology independent are areas of interest.



Complexity

- > Understanding the elements of DSPs.
- > Identifying low level functions which could be implemented using DSPs.

Keywords for this project

- > Digital Design
- > Digital Arithmetic
- > VHDL

Affinity

- > Vivado/Quartus
- > Low Level Design

Skills

- > Communicative
- > Competent in English
- > Independent

Are you a student with a can-do attitude and a passion for technology?
AimValley is your company!

Why not join us today: students@aimvalley.com