# WPU – Weird Processing Unit – New outlook on processors

Conventional central processing units found in contemporary computers or mobile devices are using same basic principles of program execution flow for decades and increasing the speed and efficiency is too complex. Project WPU attempts to create processing units with a new and original way of processing machine code and programming with their associated programming languages, in order to give us new outlook on programming and processing and come up with useful properties that can be further developed.

Method starts with initial idea for each unit that is expanded into a full processor architecture specification and also accompanying programming language. Subsequently a set of development tools for the architecture are developed, including compiler, processor simulator and an IP core allowing synthesis of given processor. Lastly a set of testing applications are programmed in the experimental programming language for given architecture and tested in the simulator and synthetized core, allowing to observe and measure the behavior of the processor.

Two architectures were created as part of the WPU project, AttoWPU and 2DWPU. Both are challenging to program in due to the differences from standard architectures, which helps to train programmer’s thinking. While AttoWPU aims for minimalistic design, 2DWPU introduces a new programming style, which allows easer design of tasks related to math, simulations or artificial intelligence and allows natural automatic parallelization to distribute workload over the available cores.

Beneficial properties of WPU architectures can be either further developed and adapted for specific uses, or possibly used in conjunction with regular architectures to speed up various tasks. However, both architectures are capable of wide ranges of tasks on their own. 2DWPU can significantly speed up certain programs with little effort from the programmer. Both units can be used in challenging programming competitions and by programming enthusiasts.