# Weird Processing Units – New outlook on programming

Central processing units in contemporary computers or mobile devices are based on principles of program execution flow known for decades. Increasing their speed and efficiency is becoming too tedious. Weird Processing Units, proposed in this project, are processing units with a new and original way of programming and program logic. Various concepts can improve solving of specialized tasks, for example extensive mathematical calculations and simulations.

Weird Processing Units begin with an initial idea that expands into full architecture and programming language specification. Development tools are designed for these units, allowing writing programs for given architecture, simulate it and gather data. Hardware versions the Weird Processing Units was implemented for FPGA devices.

Specific architecture named 2DWPU was chosen for presentation, thanks to interesting results from experiments. Heavy mathematical calculations can be implemented and performed more efficiently due to automatic and natural spread of the workload over several available cores. No effort from the programmer is required for parallel execution of parts of his program.

Simulation of simple virtual organisms was implemented on this architecture, where the behavior each one of them was characterized by a set of variables. The proposed architecture was capable to increase speed of simulation by automatically dividing workload between available cores. Alternate way of program design allowed for simpler programming as well.