SoC-Now: A Web based RISC-V SoC Generator

## Abstract:

*SoC-Now is a web-based SoC design solution in terms of generator written completely in CHISEL that enables anyone to create a SoC with their own customized specifications and then further process that SoC to the Field Programmable Gate Array (FPGA) Emulation. Additionally, it provides the capability to produce any standalone, verified, and reusable SoC component (Core, Device, Bus). A completely automated Verification system is also included. SoC generation is made possible by open-source CHISEL frameworks such as Carvan and Jigsaw. Caravan is a CHISEL API that provides bus implementation using generic interfaces, whereas Jigsaw connects memories and devices with interfaces provided by caravan. NucleusRV is an open-source RV32-IMC Core which is used in SoC-Now. The entire SoC-Now architecture is based on these generic interfaces provided by Caravan which basically are generalized wrapper atop ports of bus protocols adapters in terms of “Request” and “Response”. SoC-Now uses open-source F4PGA toolchain for automated bitstream generation and for fulfillment of ASIC workflow by using OpenLane toolchain. Extended work includes usage of user’s own closed source IPs in SoC-Now.*