Instrumentation Software Stack Instrumentation Implementation 1 (Hand-written, High-Assurance C) Instrumentation Implementation 2 (Automatically Synthesized, **Software Binaries** High-Assurance C) (RV32I Object Code) Actuator Implementation 1 (Automatically Synthesized, High-Assurance C) Voting Implementation 1 (Automatically Synthesized, High-Assurance C) Soft-core RISC-V CPU + Instrumentation IP (FPGA Bitstream) Instrumentation Implementation 3 (Hand-written Bluespec SystemVerilog) Instrumentation Implementation 4 (Automatically Synthesized, High-Assurance SystemVerilog) Actuator Implementation 2 (Automatically Synthesized, High-Assurance SystemVerilog) Voting Implementation 2 (Automatically Synthesized, High-Assurance C) Instrumentation, Actuation, Lattice ECP-5 FPGA and Voting Hardware Stack