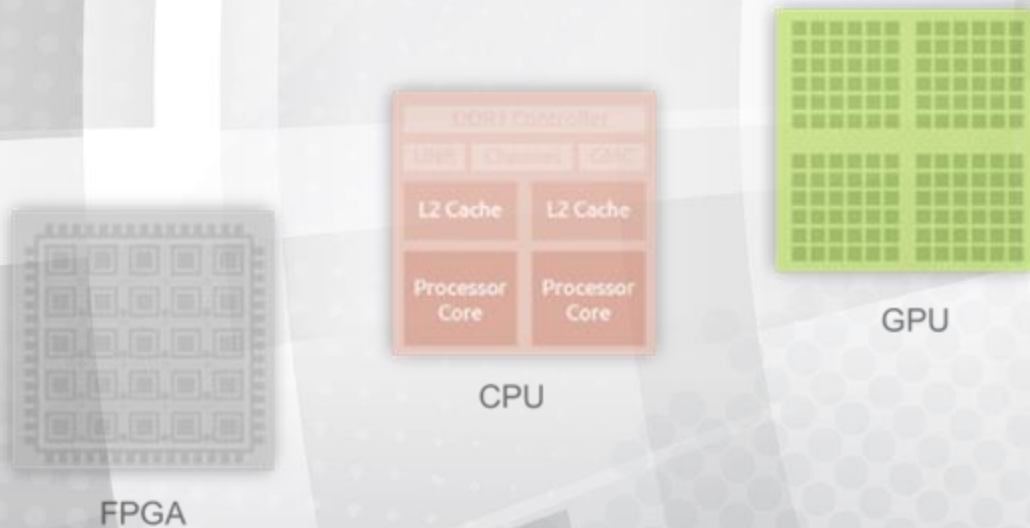


XiL Testing

Revolutionizing Automotive Development Efficiency



Anish Anthony

VP Products - Concurrent Real-Time

Unleash Customer Innovation

More
FLEXIBILITY

More
SPEED

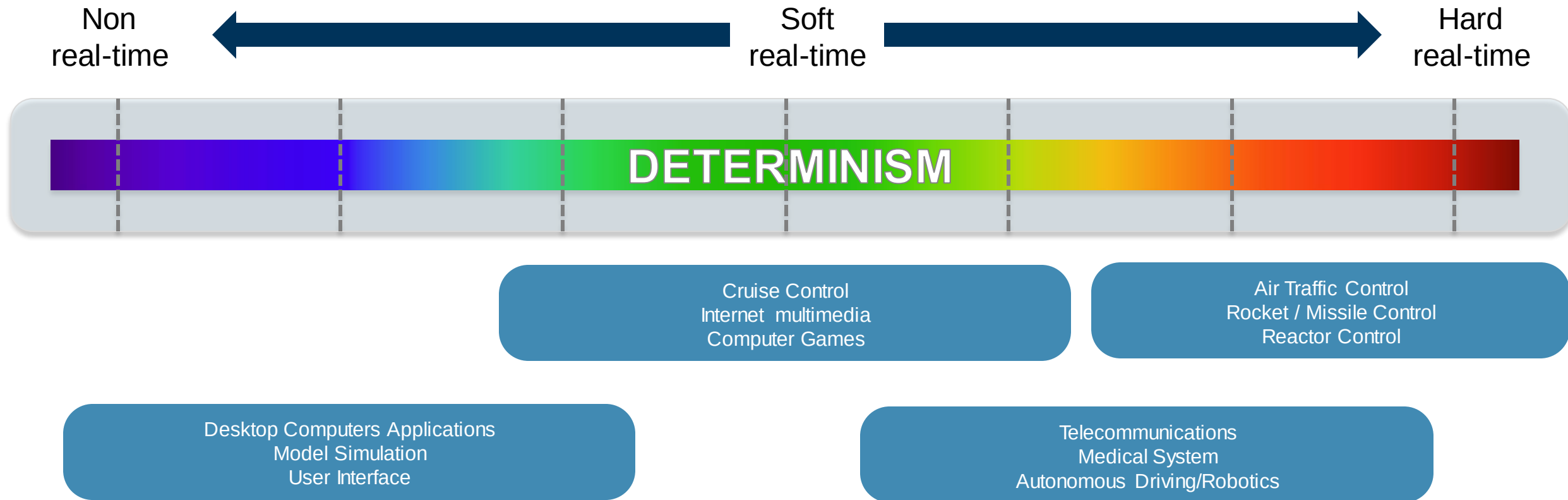
More
FOCUS

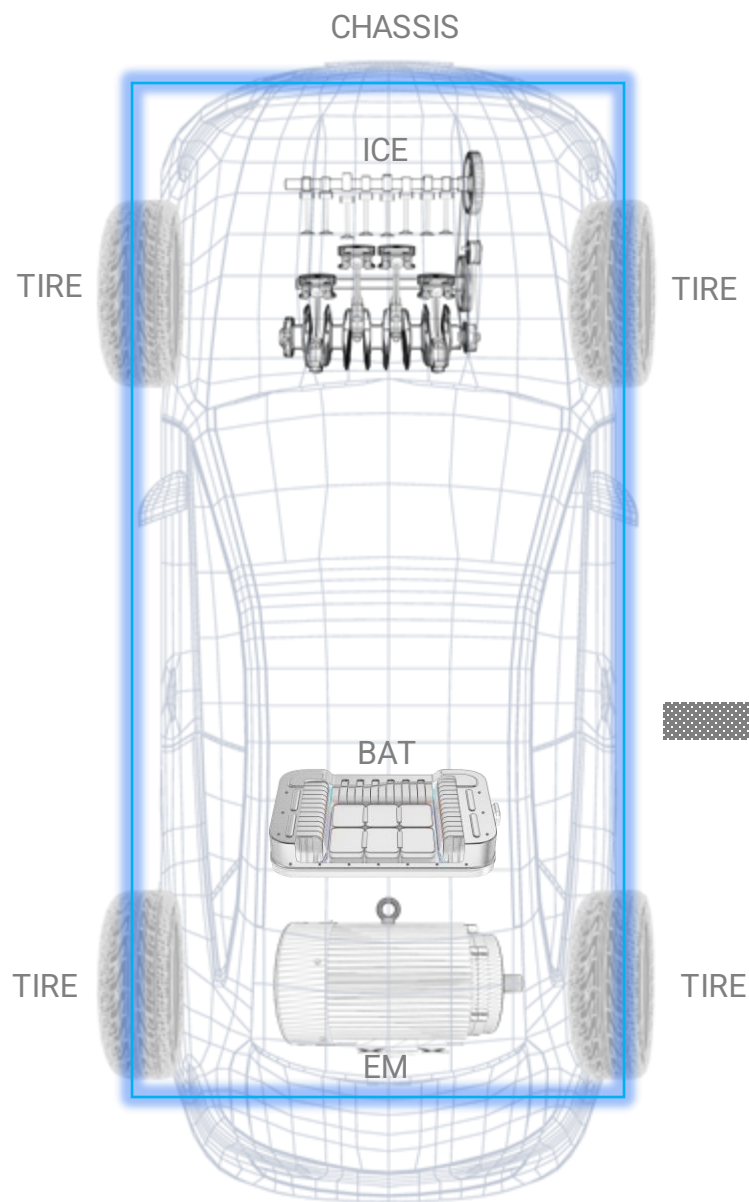
More
EFFICIENT

More
VALUE

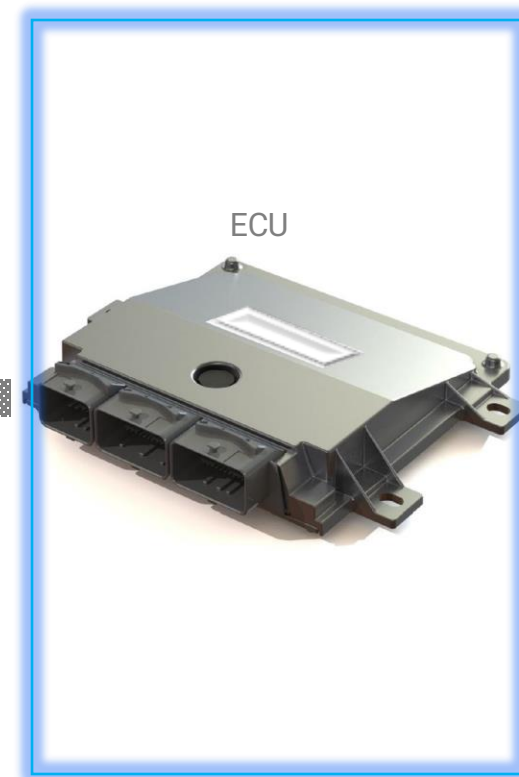


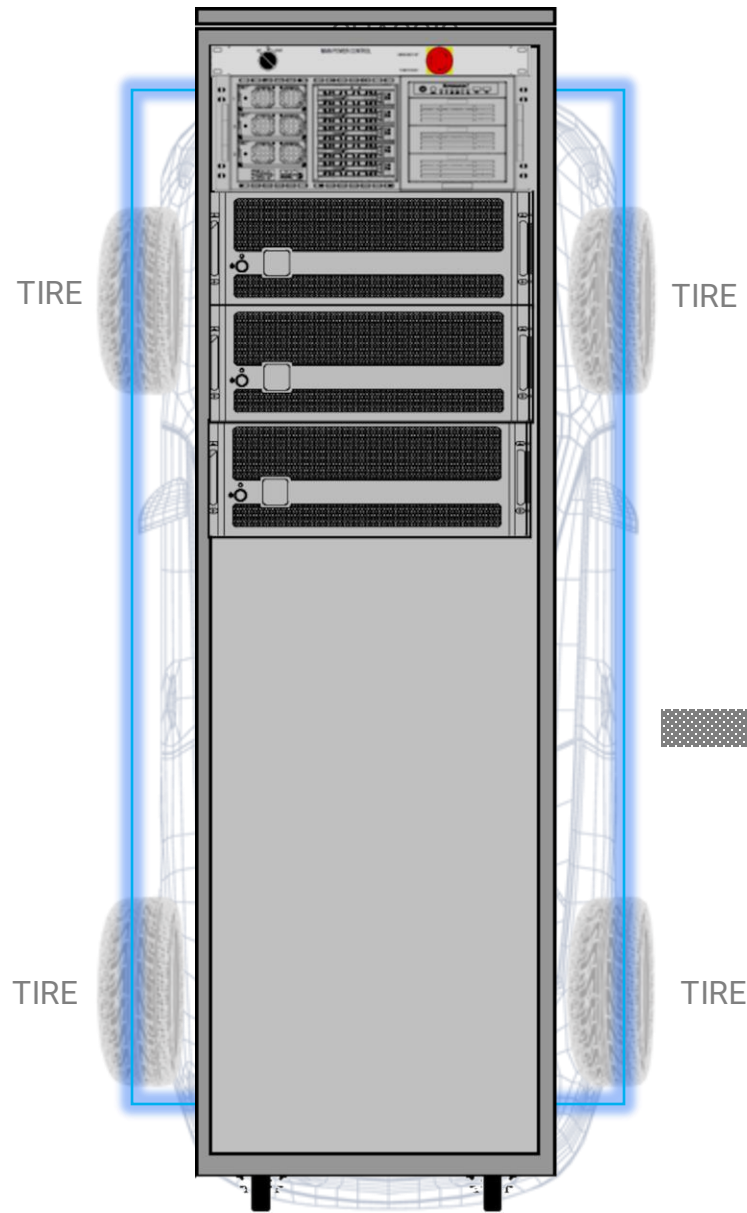
The Real-Time Spectrum





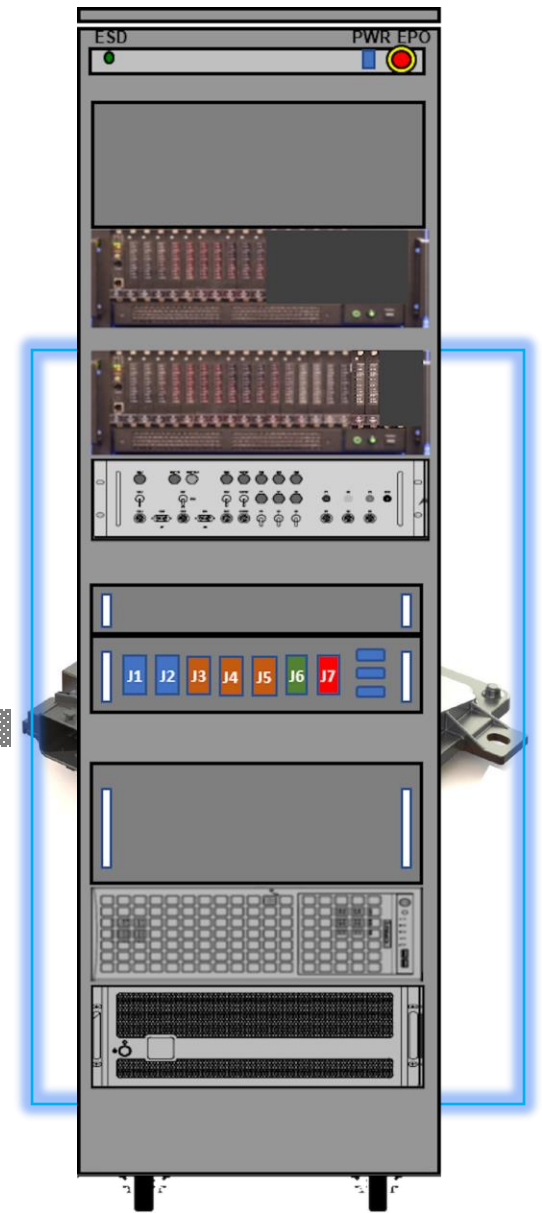
Software-in-the-loop / Processor-in-the-loop



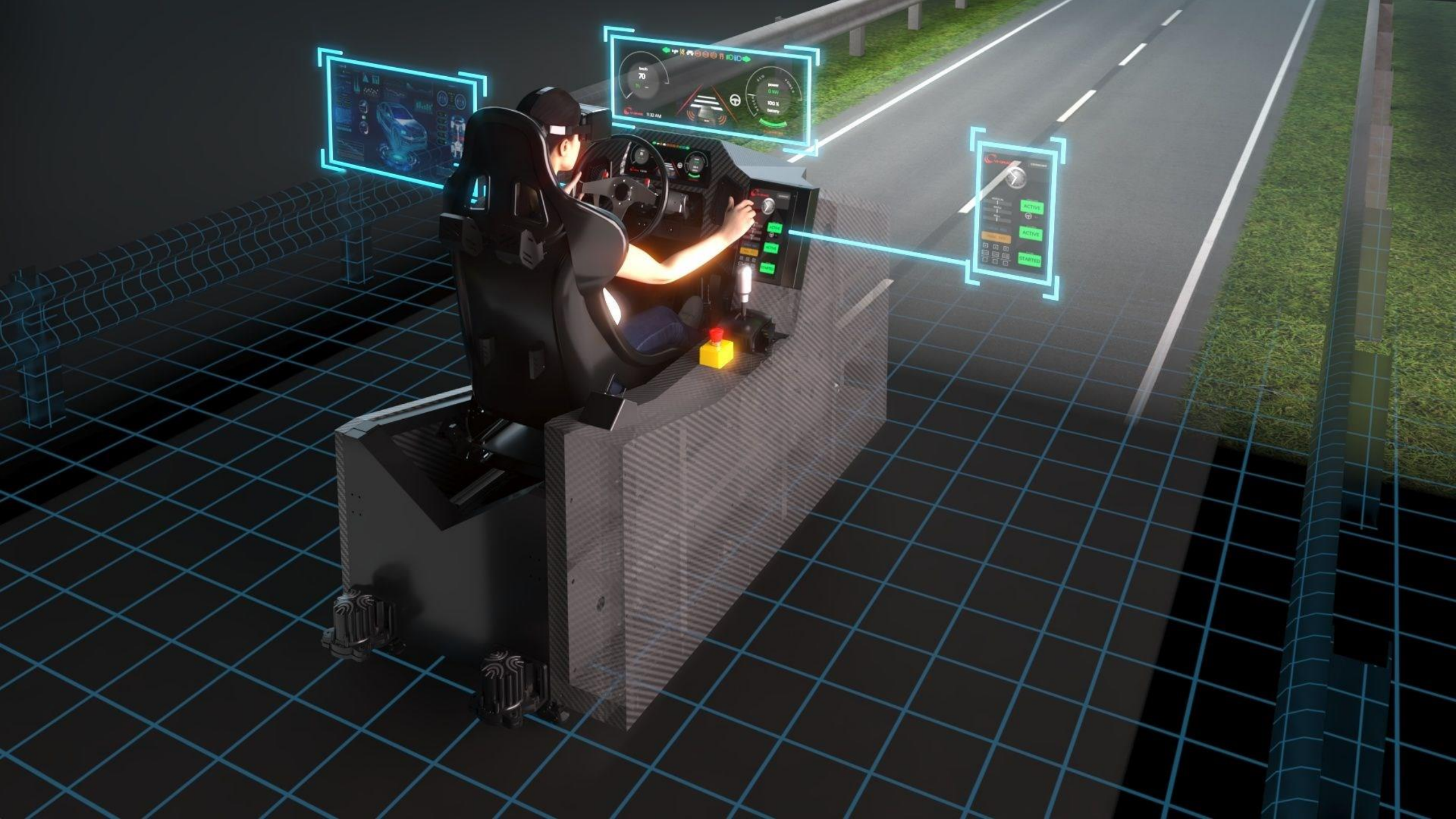


Plant
Digital Twin

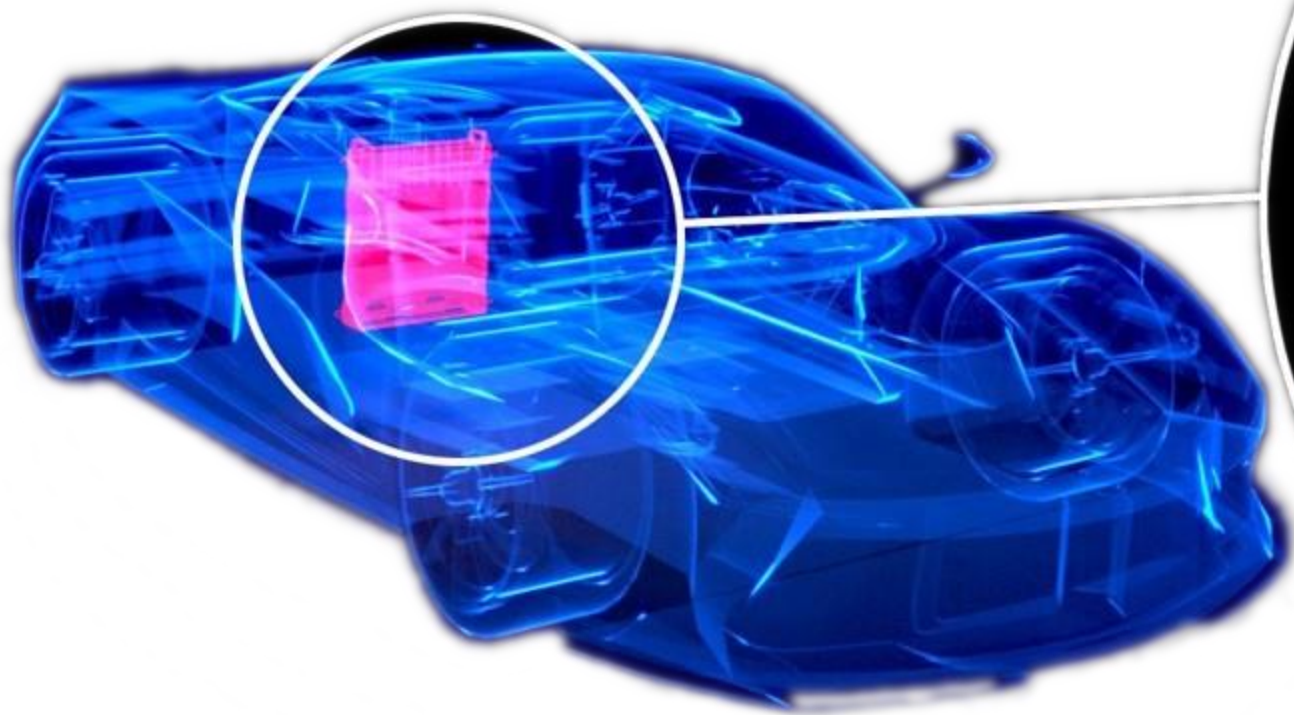
Real-time software-in-the-loop

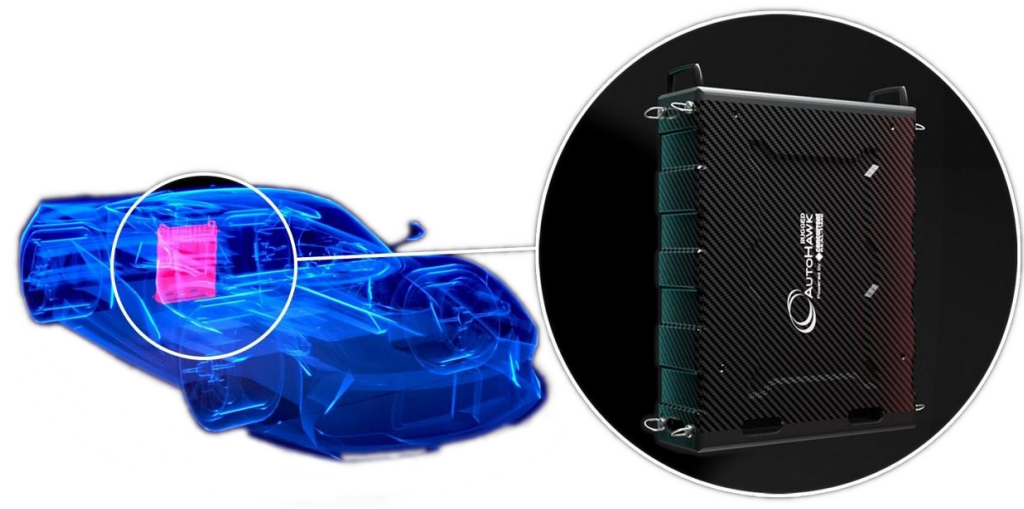


Controller
Digital Twin



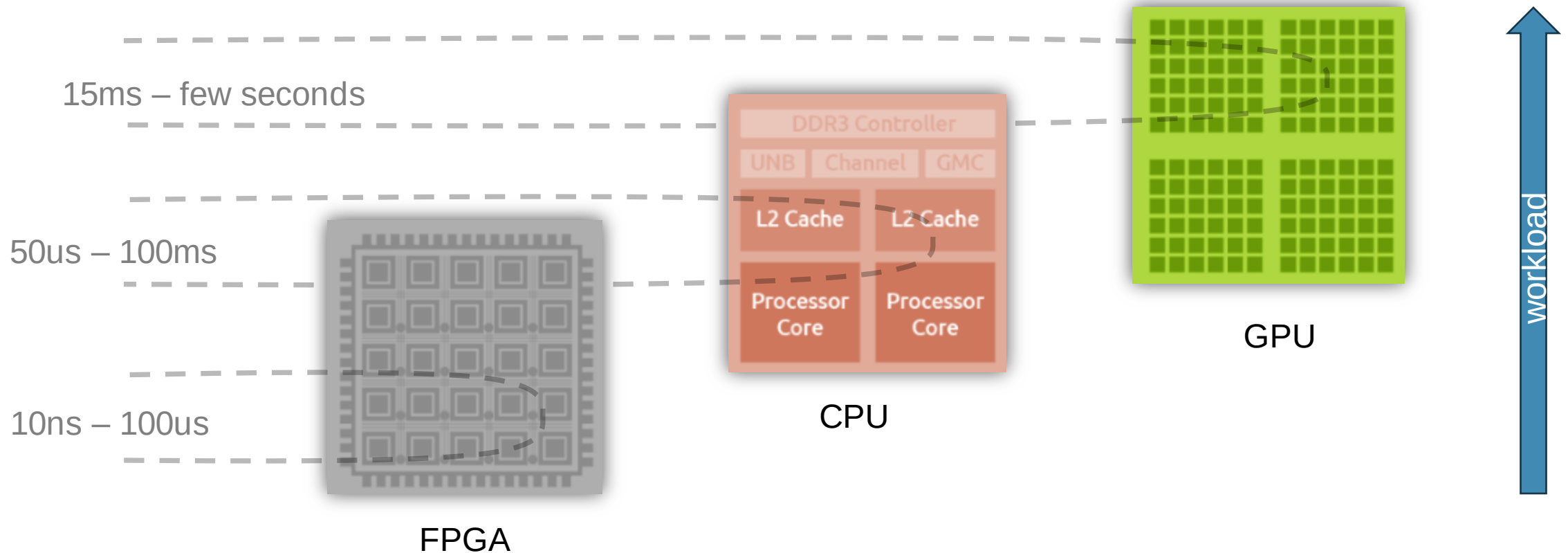






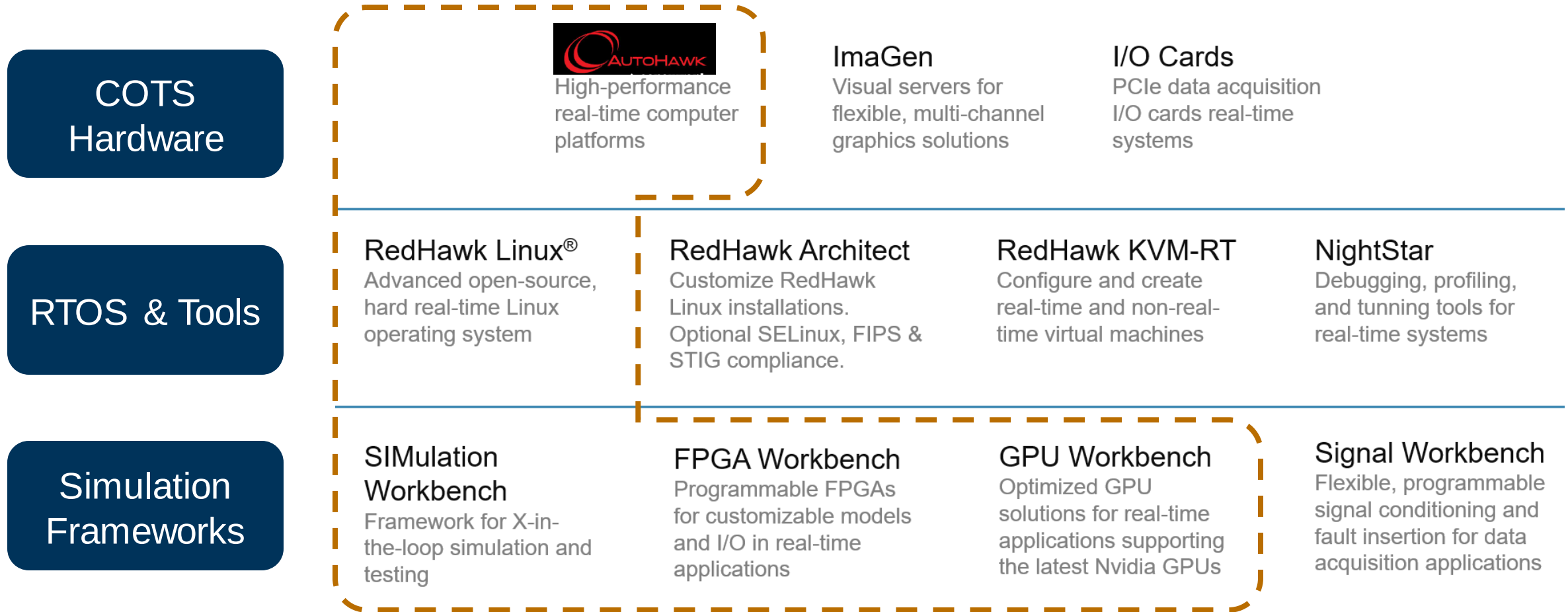
Model	Execution
Chassis	CPU
Vehicle Dynamics	CPU
Internal Combustion Engine	CPU & FPGA
Tire	CPU & GPU
Wheel Speed Sensor	FPGA
Battery	CPU
Electric Motor	CPU FPGA
Motor Inverter	FPGA
Field Oriented Controller	CPU FPGA
Scene Generator	GPU
ECU	CPU & FPGA
Perception Sensors	GPU & CPU

Typical Processing Loop Times



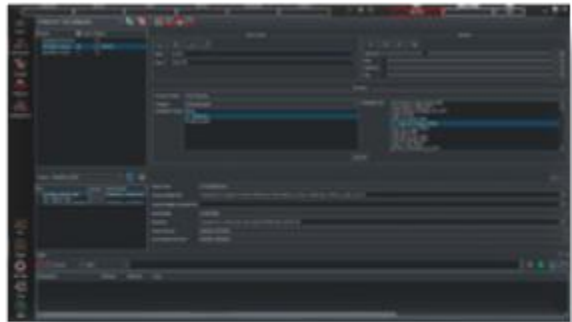
Integration of these architectures enables optimized real-time performance

Real-Time Building Blocks





SIMulation Workbench
on Windows



VI-DriveSim UI
on Windows

WSL2 based RedHawk Linux 9.2

VI-
DriveSim

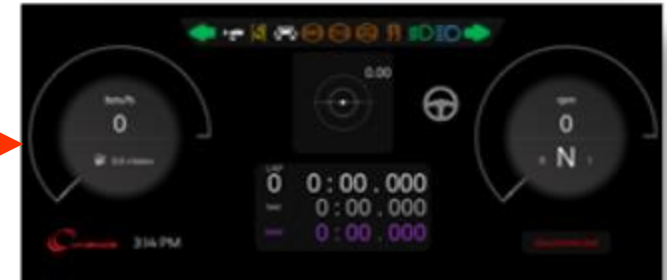
SimWB
for WSL

Simulink
models

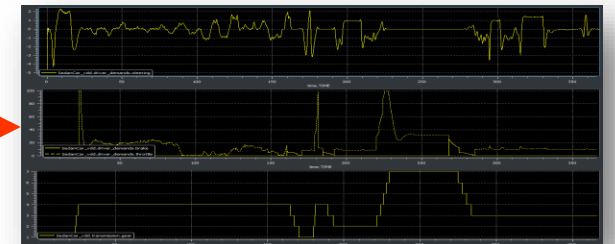
Non-RT Scheduler



VI-WorldSim



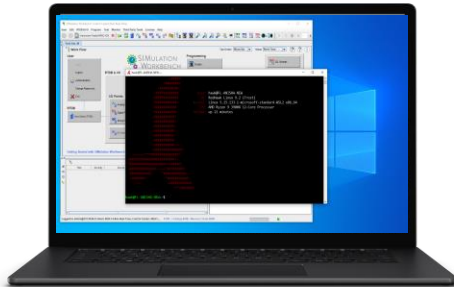
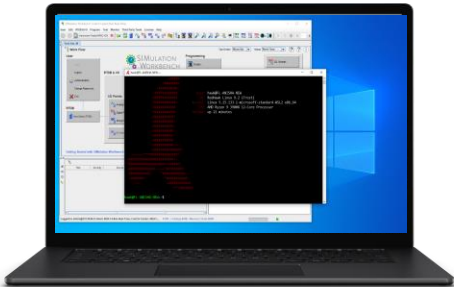
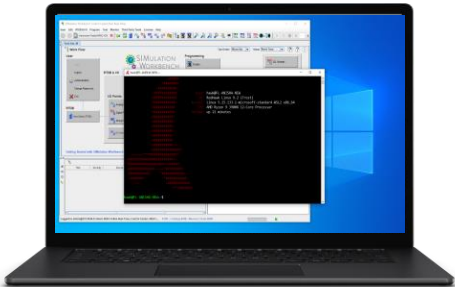
VI-Dashboard



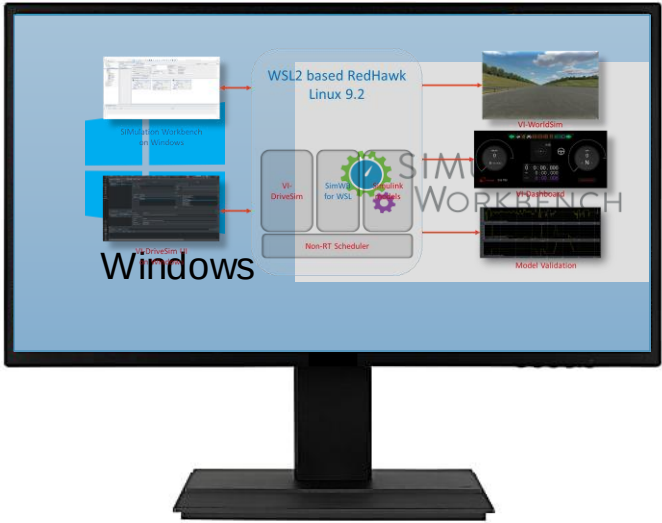
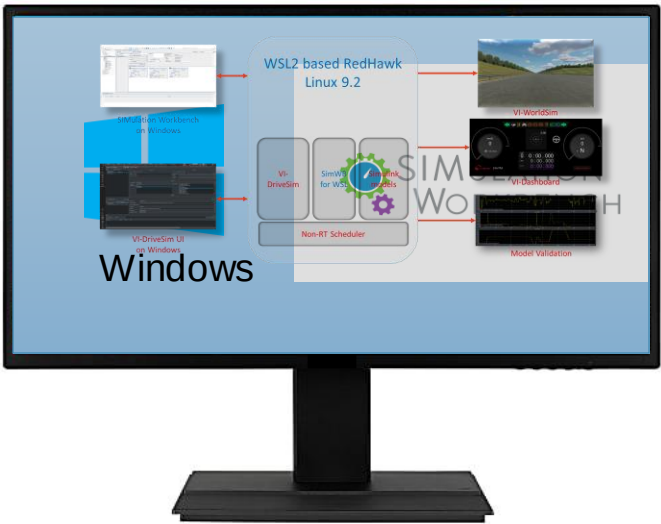
Model Validation



Integration Test



Subsystem Level Simulation and Test with
SIMulation Workbench on Windows



AutoHawk Extreme

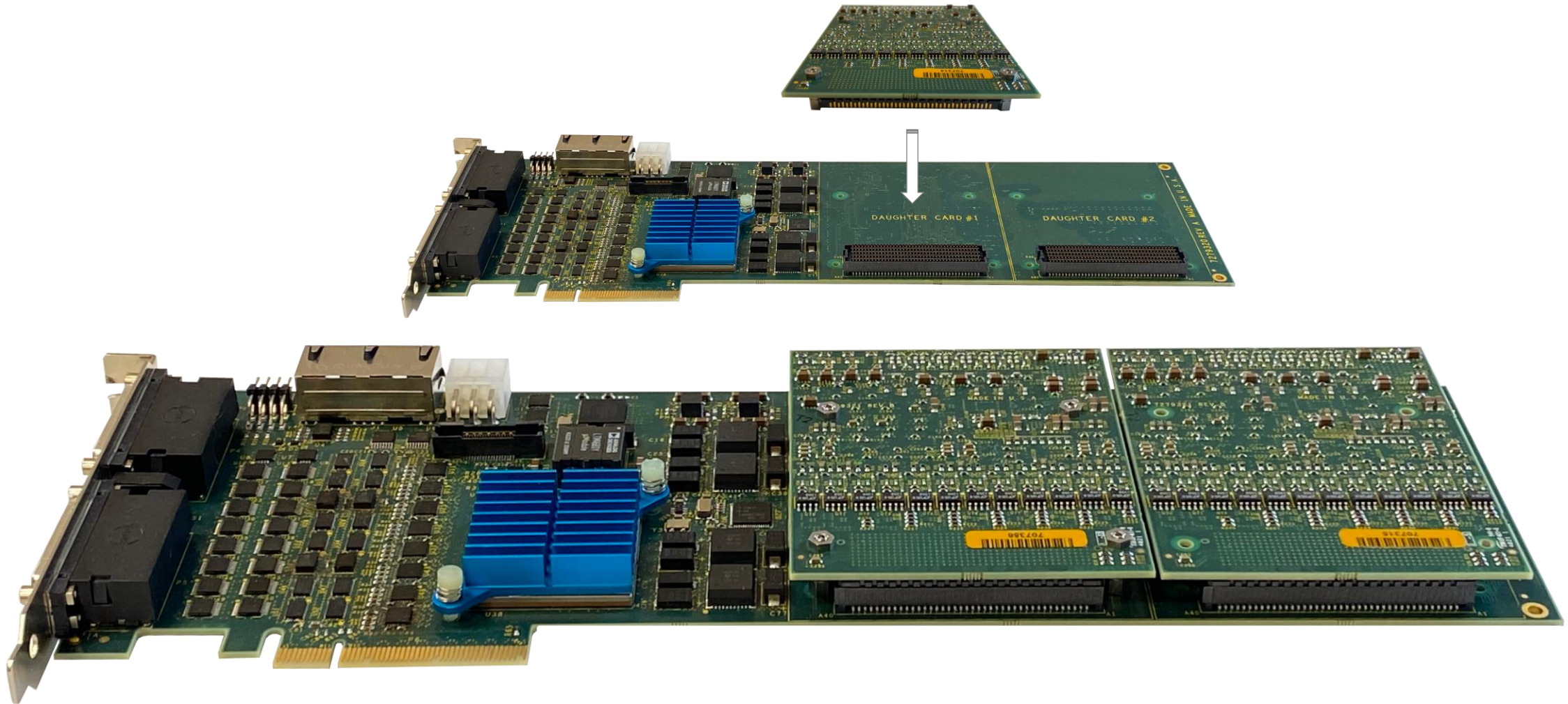
CPU	Base Clock	Over Clocked	RedHawk Linux	Simpack Benchmark		
				Cores Used	Demo Model	Complex Model
Intel Core i9-14900K	8 performance cores @ 3.2 GHz 16 efficiency cores @ 2.4 GHz	8 performance cores @ 5.2 GHz 16 efficiency cores @ 4.0 GHz	9.2	6	~480us	~690us
Intel Core i7-13700K	8 performance cores @ 3.4 GHz 8 efficiency cores @ 2.5 GHz	8 performance cores @ 5.4 GHz 8 efficiency cores @ 3.0 GHz	9.2	6	~650us	~800us
Intel Xeon Gold -6250	2x 8 cores @ 3.9 GHz	N/A	8.4	8	~850us	~1250us

AutoHawk Extreme

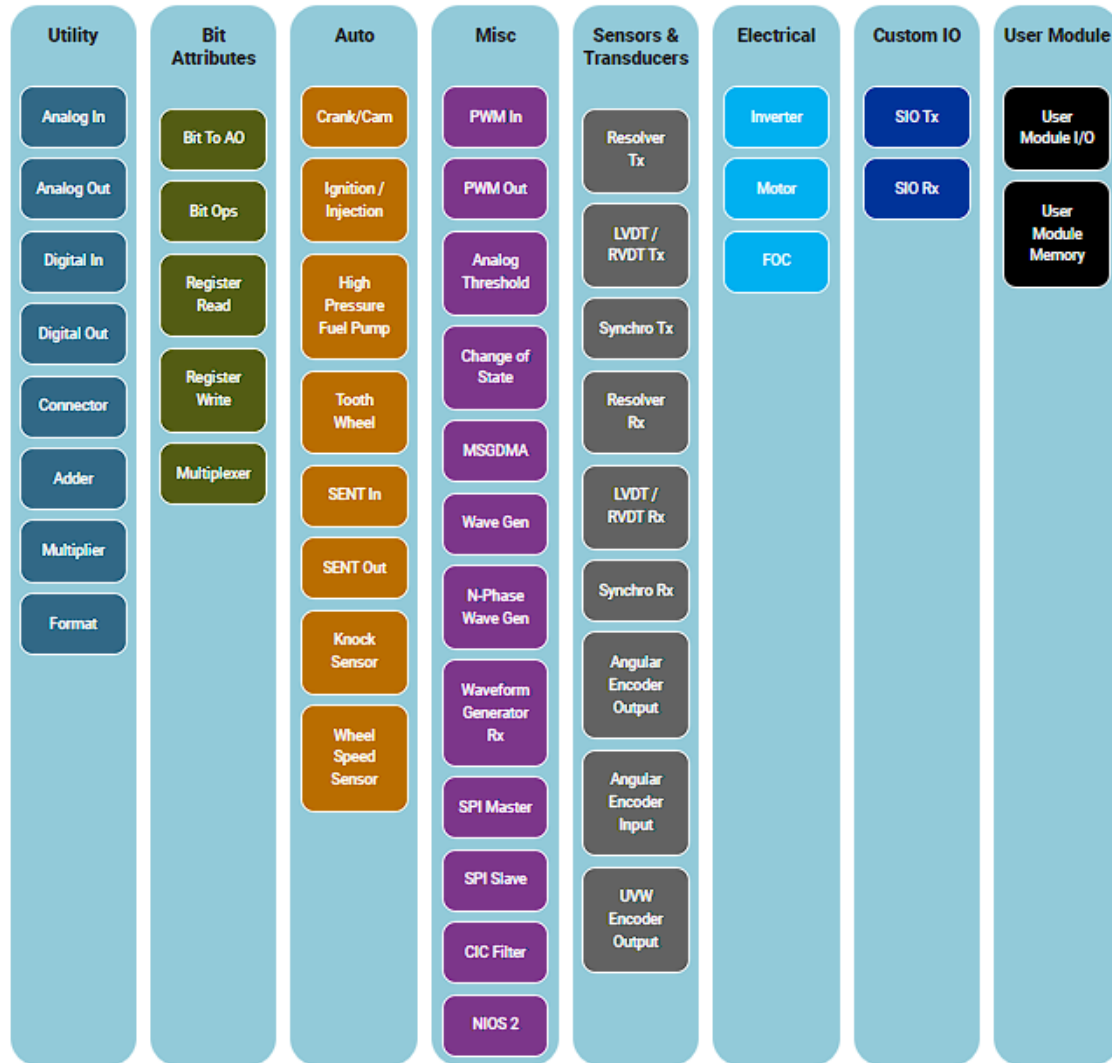
CPU	Base Clock	Over Clocked	RedHawk Linux	Simpack Benchmark		
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Intel Core i9-14900K	8 performance cores @ 3.2 GHz 16 efficiency cores @ 2.4 GHz	8 performance cores @ 5.2 GHz 16 efficiency cores @ 4.0 GHz	9.2	6	~480us	~690us



Next Gen FPGA Board



FPGAWB IP Cores



- No FPGA experience required to create FPGA firmware
- Ability to run models in micro-second and sub micro-second frame rates
- Use CCRT IP cores or 3rd party vendors IP cores or create your own
- Designed for real-time
- Replace obsolete IO cards (VME) with PCIe