

- ✖ Bad
- ✂ Nice
- ✓ Good
- +✓ Very Good

Tools & Languages

VivadoHLS, LegUp, Catapult, Intel OpenCL, MaxJ,

DFiant

Chisel, SpinalHDL, PyRTL, Migen, MyHDL, Bluespec, Cx

VHDL, Verilog, SystemVerilog

Property Group	Properties	HLS	DF-HDL	HL-RTL	RTL	Comments
Hardware Design Fundamentals	Concurrent Semantics	✂	✓	✓	✓	
	Bit Accurate Type Safety	✂	+✓	✓	✓	
	Clear Synthesizability	✖	✓	✓	✖	Legal language syntax, but illegal for synthesis purposes
	IO Ports & Connectivity	✂	+✓	+✓	✓	
	Hierarchies & Compositions	✂	+✓	+✓	✓	
	RTL/Netlist Blackbox Interface	✂	✓	✓	✓	
	Clock and Reset Management	✂	✂	✓	✓	
	General Purpose Top-Level Design	✖	✓	✓	✓	
Design Abstraction & Automation	State Abstraction	✓	✓	✖	✖	
	Time Abstraction	✖	✂	✖	✖	
	Auto-Balanced Manual Pipelining	✂	✓	✖	✖	
	Automatic Pipelining	+✓	✓	✖	✖	
	Automatic Flow-Control	+✓	✓	✂	✖	
	Control Loop Pipelining	+✓	✖	✖	✖	
Meta-Programming	Conditional & Looped Generation	✓	✓	✓	✓	
	Recursive Construction	✂	✓	✓	✖	
	Inheritance/Typeclasses	✖	✓	✓	✖	
	Polymorphic Interfaces	✂	✓	✓	✂	
Post-Design Capabilities	Legible RTL Output		✓		✓	
	Simulation	✓	✂			
	Verification	✓				
	Debugging		✓			
Other Properties	Open Source	✖	✓	✓	✓	
	Maturity	✓	✖	✂	✓	
	Documentation	✓	✖	✂	✓	
	Familiar Semantics	✂	✖	✂	✓	