SmartDV

Get to Know SmartDV

Winter 2024–25

Updated 2025-02-08

IP **Your** Way

At SmartDV, we believe there's a better way to do IP.

Whether you're sourcing **design IP** for your next SoC, ASIC, or FPGA, or seeking **verification solutions** to put your chip design through its paces, we can quickly and reliably **customize** our extensive portfolio to meet your unique needs.

Don't allow other IP suppliers to force one-size-fits-all cores into your design. Get the IP you need, tailored to your specs, with SmartDV: **IP Your Way.**

What to Expect from SmartDV

- **Extensive Product Portfolio.** 500+ diverse IP and VIP products.
- **Tailored IP Solutions.** Customize our IP to meet your specific needs.
- **Integrated Solutions.** Partnerships for integrated PHY + controller.
- **Flexible Licensing.** Bundle IP with multi-use or multi-year licenses.
- **Competitive Pricing.** Leverage our attractive and bundled pricing options.
- **Dedicated Support.** Benefit from our robust 24/7 support system.
- **Global Reach.** Trusted by a broad range of Tier-1 clients worldwide.

IP Portfolio Overview

IP Designed with Verification in Mind

Current IP Portfolio Breakdown

Design IP VIP

Foundational technical strengths evolve into our key differentiators

Design IP

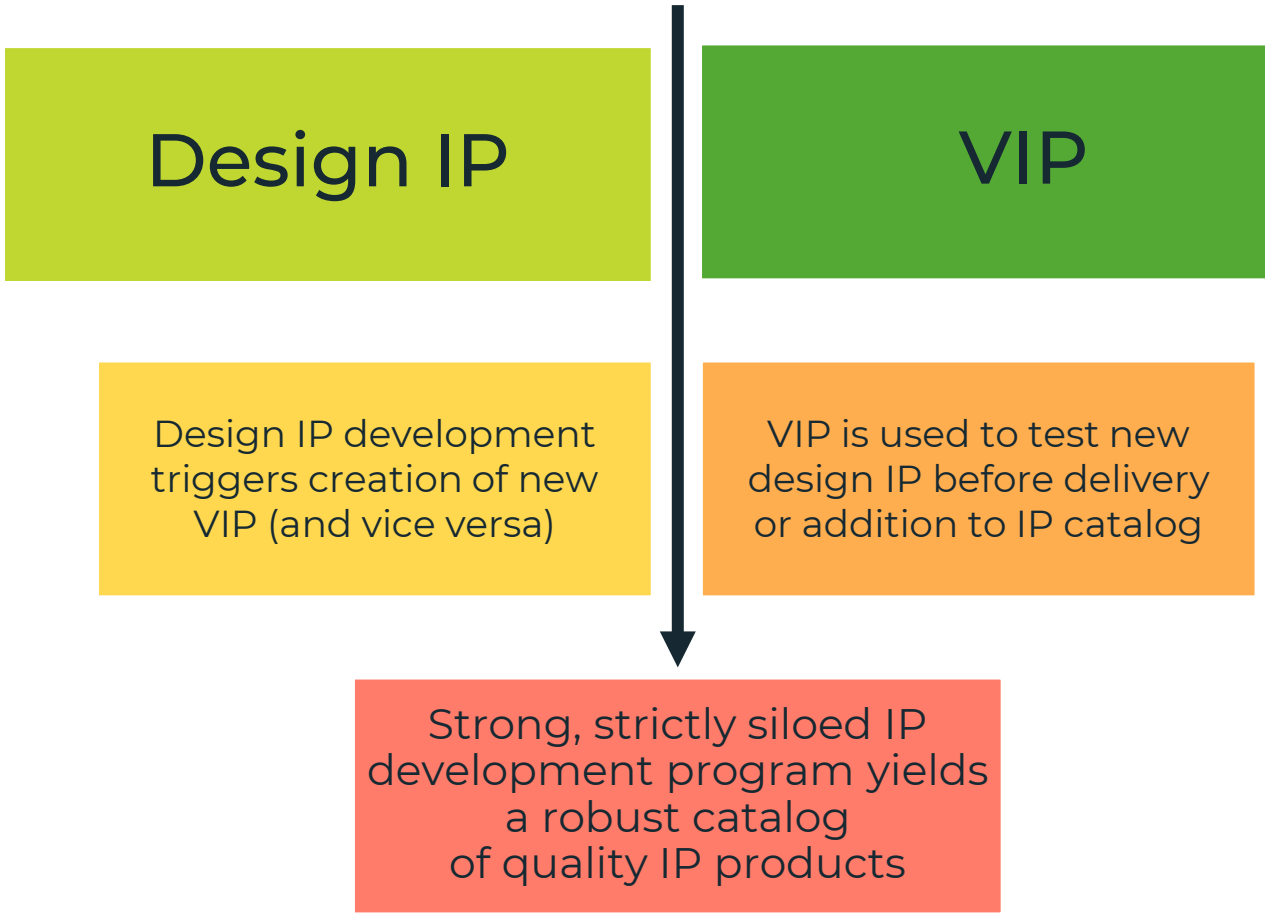
- Aerospace/Defense
- Artificial Intelligence
- Audio/Video
- Automotive
- Internet of Things
- Mobile
- Networking
- Safety/Security
- Storage
- 5G

Verification IP

- Simulation IP
- Emulation/FPGA Transactor VIP
- Formal Assertion VIP
- Post-Silicon Validation IP

SmartDV

Distinct Design IP and VIP Teams



Separate engineering departments

- Standard/protocol experts
- Shared high-level vision
- Parallel development

Constrained, thoughtful collaboration

- No code reuse
- Reciprocal feedback

Cross-verification of design IP and VIP

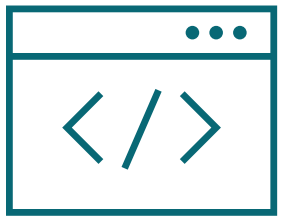
- Each department is stronger because of the other
- IP catalog follows suit in quality

Selection of SmartDV's Product Families

- AMBA
- ARINC
- CXL/PCIe/UCIe
- Display
  - DisplayPort
  - HDMI
- Ethernet
- JEDEC
- Memory Models
  - DRAM & DFI
  - Flash
  - SRAM/SDRAM
- MIPI
- Security
- SPI
- USB

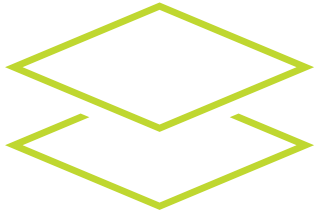
...with additional and updated IP in constant, ongoing development

Rapidly Expanding Portfolio of Design IP



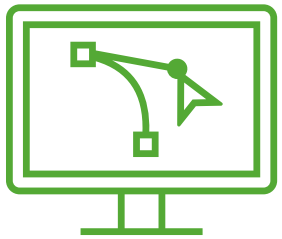
Ready to meet your design needs

- Available in Verilog and VHDL (optionally)
- Broad support for audio/video, automotive, bridge, DDR, DMA, Ethernet, Flash, high-speed interfaces, MIPI, Serial Bus, and more



Simple configuration and custom access

- SoC Bus: APB, AHB, AXI, or generic bus interface
- User-customizable control status register (CSR) file



Proven and reliable

- Validated using SmartDV's verification IP
- Silicon proven and/or jointly developed with lead customers

A Leader in VIP for Nearly 20 Years

Compatible and compliant with industry standards

- Verification languages: UVM, SV, VMM, OVM, Vera, Verilog, SystemC
- Simulators, including open source and cloud

Delivered with all you need to succeed

- Compliance test suite
- Functional coverage model

World-class support from our expert verification engineers

- Rapid turnaround of bug fixes
- On-demand customization

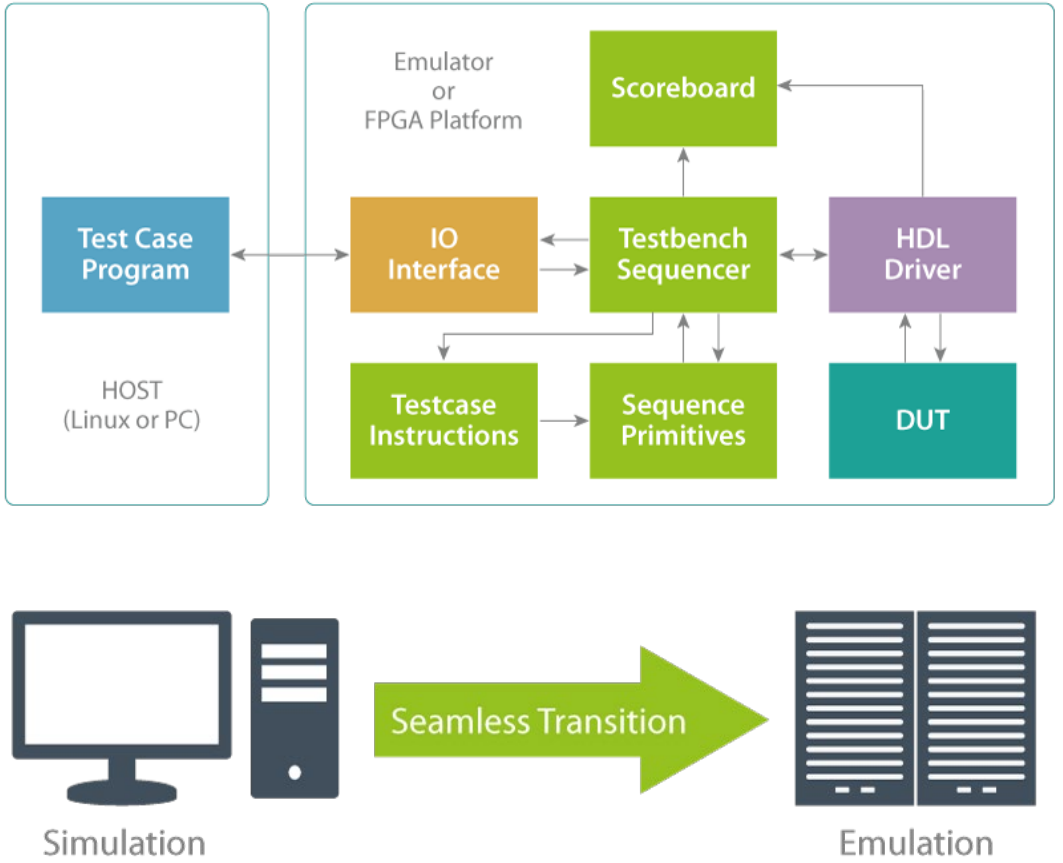
SimXL™ Synthesizable Transactors

Fast and seamless transition from simulation to emulation

- Huge productivity boost—transition from simulation to emulation in days versus months of effort
- Sequence lib, test cases, API, behavior, and time delays identical to simulation VIP

Broad compatibility

- Palladium®, Veloce®, ZeBu® emulators
- FPGA prototyping platforms including HAPS®, Proteon, and HyperSilicon



Formal Assertion VIP

Compatible with leading formal verification and simulation environments

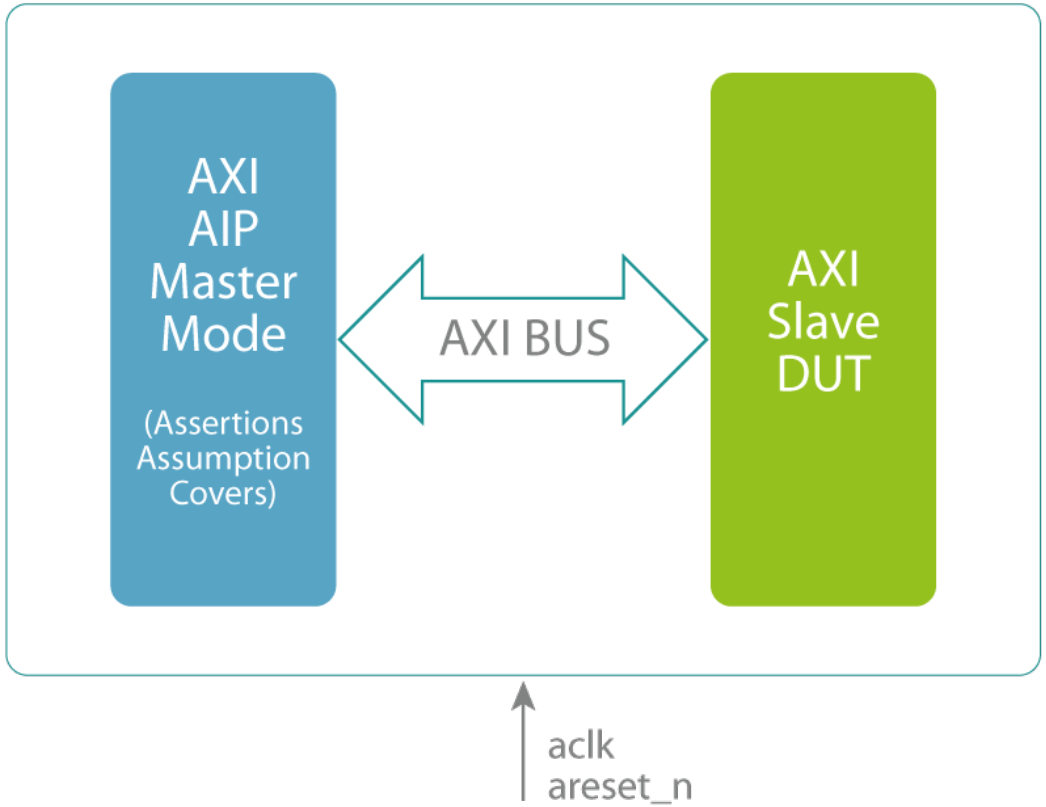
- VC Formal
- Jasper
- Questa Formal

Plug-and-play solution

- Reusable
- Easy integration

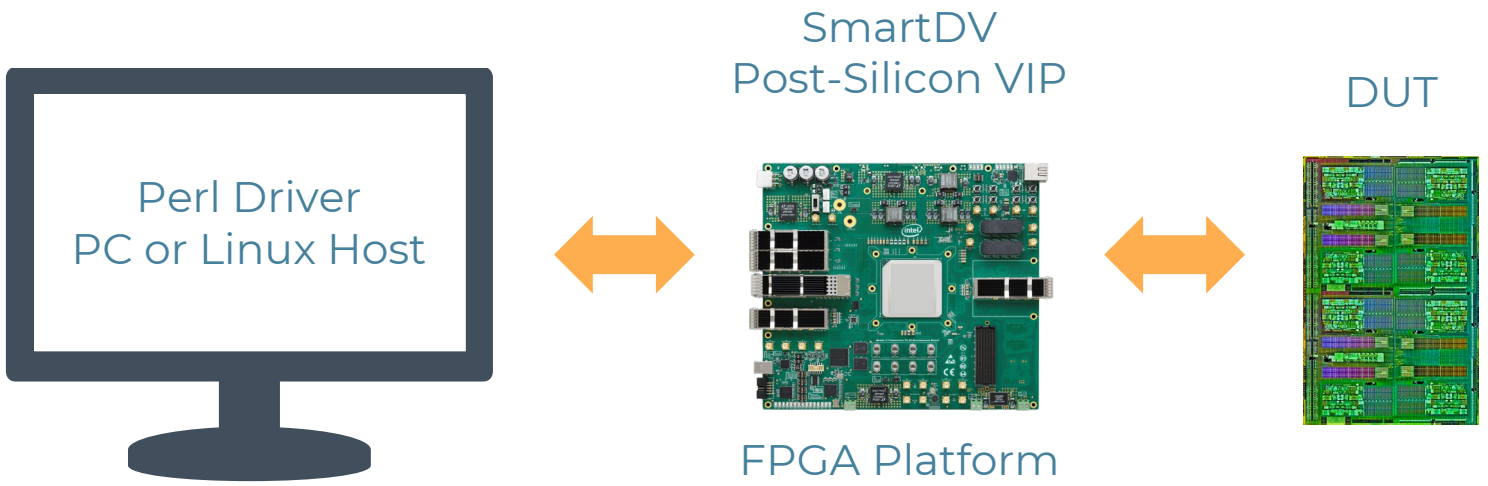
Delivered as source code

- Modify and add new assertions
- Easier for debug



Post-Silicon VIP

- Enables fast verification of silicon
- Runs on any FPGA Platform used for FPGA prototyping or post silicon validation
- Supplied with required LINUX Perl Driver
- Full duplex capable UART interface for VIP controls



IP Customization

SmartDV has a lot of IP—and it's all configurable

USB – PCIe – Ethernet – MIPI
AMBA – Memory – …

That's great, but it also means a staggering number of choices—especially when you factor in each user's unique design requirements

Customer Requirements:

- **Which host interface?**
- **Interrupts?**
- **Command reordering?**
- **Remove features?**
- …

Traditional Customization = Effort and Time

USB – PCIe – Ethernet – MIPI
AMBA – Memory – …

Customer Requirements:

- Which host interface?
- Interrupts?
- Command reordering?
- Remove features?
- …

Manual Engineering Effort

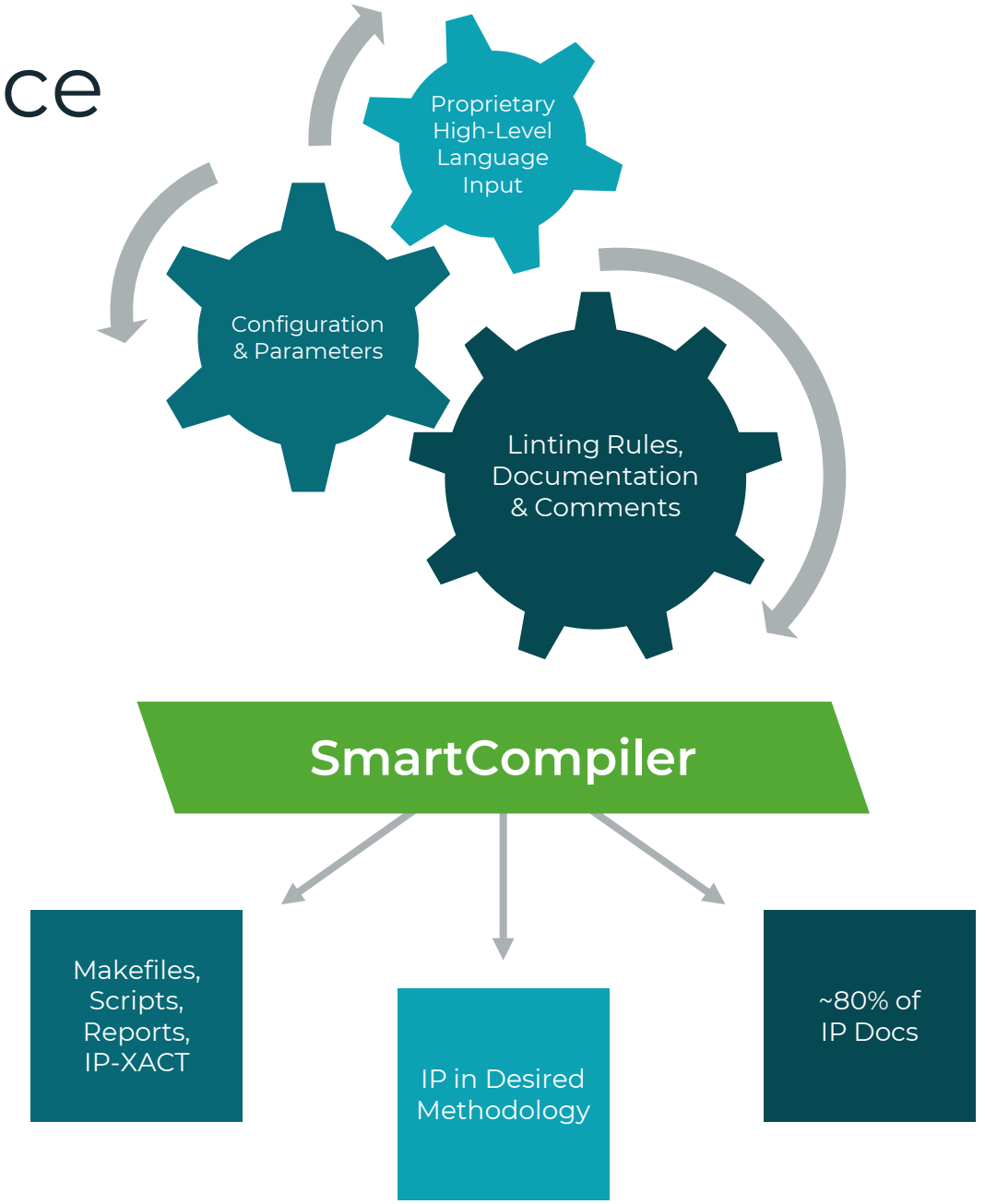
IP +

Long turnaround time, buggy IP, unhappy customers

The SmartCompiler Difference

Quality IP. Done Quickly. By Experts.

- 10X reduction in IP customization effort compared to manual development
- Reduced risk of human errors in coding
- Higher-quality, faster delivery of the IP
- Robust, mature flow for development, testing, and validation
- In use for 15+ years and proven on hundreds of IPs delivered to happy customers
- Customers don't need to learn the language or the tool—SmartDV's engineers will execute your customizations and deliver the completed IP



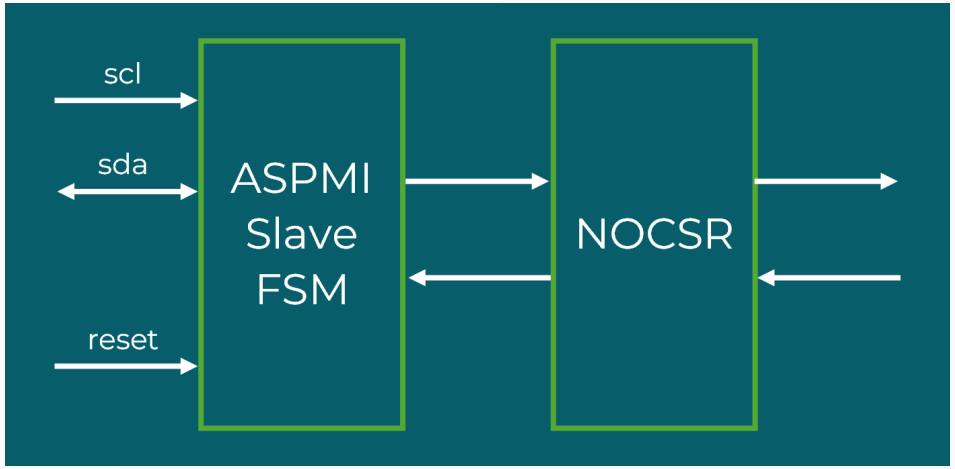
Customization Success Story: ASPMI Design IP

Challenge: Enhanced MIPI SPMI for top-tier consumer electronics company

- Solutions from customer's silicon suppliers failed to meet specifications consistently
- Needed custom implementation of high-speed MIPI protocol

Solution: SmartDV's new ASPMI core—exactly to spec

- Customized MIPI SPMI using SmartCompiler™
- Created tailored VIP to simplify integration
- Verified and validated new IP for compliance
  - ✓ ASPMI Specification 2.x
  - ✓ MIPI SPMI Specifications 1.0 & 2.0



Result: Ongoing partnership and stronger design ecosystem

- SmartDV designated as sole source for custom ASPMI design IP
- Silicon suppliers can license verified ASPMI with confidence in standard compliance

In the Broader Ecosystem

Industry Standards Body Involvement



Worldwide Presence. Global Mentality.

Global sales and field application engineering presence

Hands-on involvement of IP design experts

Responsive service and support—24/7

Next Steps for Working Together

What **design IP and VIP** can we provide for you?

How can we **customize our IP** to suit your needs?

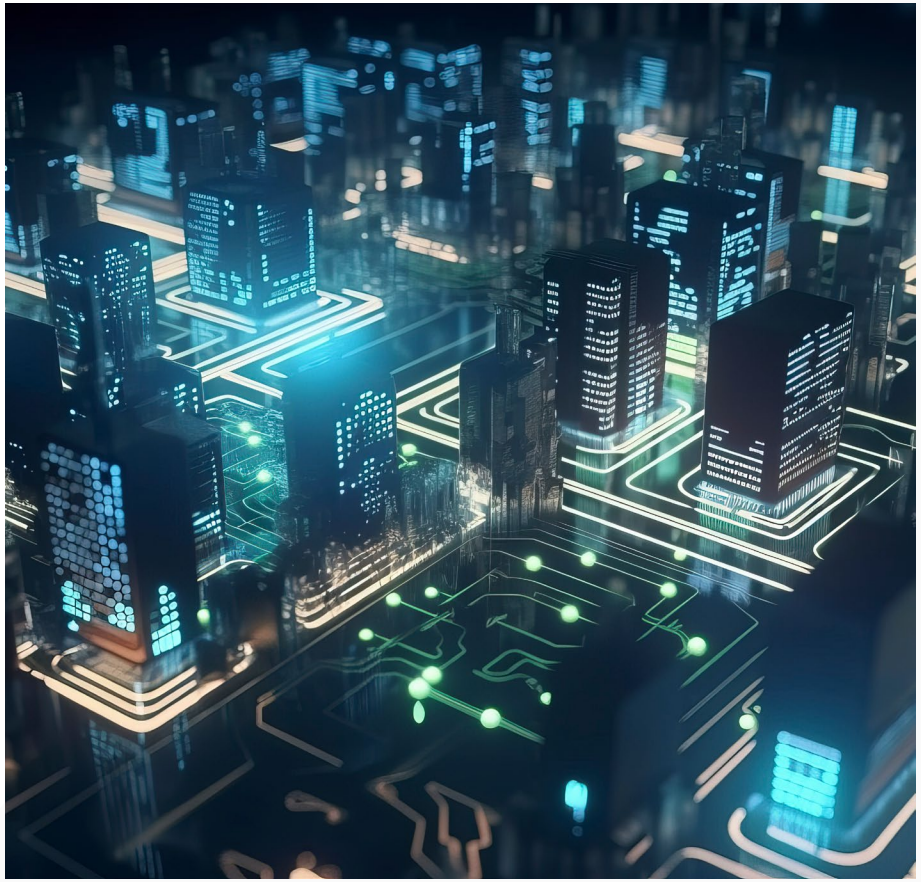
Do you need a **PHY or controller** that we can help source?

Let’s discuss sensible **licensing models** for your team.

What about **pricing expectations** and **payment terms**?

How can we **support your team** throughout the project?

Please leverage our **network** for your further needs!



Your ideas. Our IP.

What can we build together?

www.smartdvtech.com