

# VLSI DESIGN & VERIFICATION



## Overview

Today's ASIC/SoC designers are faced with the challenge of managing increasing complexity in functionality, integration of multiple processor cores & hardware acceleration engines, increasing chip size, decreasing time-to-market and decreasing power consumption. Design and Verification of complex ASICs/SoCs therefore requires serious domain knowledge to understand the functional requirements, develop block & system-level models, and methodology-driven test bench creation to ensure excellent test coverage keeping time-to-market constraints in mind.

ALLEN Calsoft Labs offers state-of-the-art VLSI design and verification services to semiconductor vendors and custom ASIC designers in Networking, Wireless, Mobile Multimedia and Consumer Electronics markets. At ALLEN Calsoft Labs, we specialize in front-end design and verification for complex multi-million gate ASICs/SOCs with multiple RISC/DSP cores and hardware accelerators.

## Our Services

### Systems architecture & RTL design

ALLEN Calsoft Labs works with Tier-1 silicon vendors and fabless semiconductor companies from Spec-to-Netlist. ALLEN Calsoft Labs is one of the few companies that help customers in system-level model and design partitioning using proven methodologies, ESL tools and rich domain expertise in networking, multimedia and wireless. Our services include:

#### System architecture & Partitioning

- ▶ Block / System-level modeling
- ▶ Transaction Level modeling (TLM)
- ▶ Architecture validation

Matlab	Verilog
SystemC	VHDL
C/C++	SystemVerilog

#### Front-end Design

- ▶ RTL design
- ▶ IP integration
- ▶ Logic synthesis & Timing analysis

Modelsim
Verilog-XL, NCVerilog
VCS
DC Ultra, Primitime

ALLEN Calsoft Labs works with its qualified partners specializing in Physical Design & Verification to offer end-to-end RTL-to-GDS2 capabilities to customers looking for one-stop silicon design house.

### Verification & Validation

Over the last few years ALLEN Calsoft Labs has emerged as a leading ASIC/SOC design verification house with capabilities in IP verification, Block/Sub-system level verification and System-level verification & validation of complex SOCs. We have successfully verified systems with multiple clocks, power domains and speeds up to 1.2 GHz. We focus on the latest verification methodologies – eRM, OVM, VMM and UVM with special emphasis on re-usability of test benches at Block, Sub-system and System level, thereby helping our customers save time in complex ASIC/SoC verification process.

Our services include:

### ASIC/SOC Verification

- ▶ Test bench design / development
- ▶ Verification IP development
- ▶ Functional Verification at Block, Sub-system or System level
- ▶ Model-based Verification
- ▶ Hardware-Software Co-Verification
- ▶ Coverage-driven Verification
- ▶ Assertion-based Verification
- ▶ Constrained-Random Verification
- ▶ Low Power (CPF / UPF) Verification
- ▶ Test bench migration to e/Vera/SystemVerilog

SystemVerilog  
Vera  
e(Specman)  
SystemC  
C++  
Customer-specific proprietary DV tools  
CPF/UPF

### System Validation

- ▶ ASIC prototyping on FPGA
- ▶ Functional Validation
- ▶ Performance Testing
- ▶ Conformance & Interoperability Testing
- ▶ Load and Stress Testing
- ▶ Board Bring up
- ▶ Software Integration and Testing

Perl  
Shell  
Tcl/Tk  
C/C++  
Assembly

### Key Differentiators

- **Methodology oriented:** ALTEN Calsoft Labs lays special emphasis on re-usability of test benches at Block, Sub-system and System level in SOC verification engagements. Our focus on the latest verification methodologies – eRM, OVM, VMM and UVM, ensure that we put together high quality teams that mitigate project risks for customers.
- **Systems knowledge:** ALTEN Calsoft Labs leverages its domain knowledge in having worked on 1000+ products in networking, media, consumer electronics and industrial control markets to offer skilled resources that understand the DOMAIN and latest TOOLS to deliver high productivity and better functional coverage in SOC verification projects.
- **Low-Power verification:** ALTEN Calsoft Labs has a core team that specializes in LP test case development and debugging using CPF/UPF tools. Good understanding of low power concepts, power domains and clock gating techniques allows our team to verify power domains individually and cumulatively based on the application/product use cases.

#### ABOUT ALTEN CALSOFT LABS

ALTEN Calsoft Labs is a next gen digital transformation, enterprise IT and product engineering services provider. The company enables clients innovate, integrate, and transform their business by leveraging disruptive technologies like mobility, big data, analytics, cloud, IoT and software-defined networking (SDN/NFV). ALTEN Calsoft Labs provides concept to market offerings for industry verticals like education, healthcare, networking & telecom, hi-tech, ISV and retail. Headquartered in Bangalore, India, the company has offices in US, Europe and Singapore. ALTEN Calsoft Labs is a part of ALTEN group, a leader in technology consulting and engineering services.

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