Our vision is "Vibrant VLSI industry" in India.

CVC’s mission is to create a vibrant VLSI ecosystem in India.

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CVC Creating Vibrant VLSI ecosystem

What’s VLSI?
VLSI (Very Large Scale Integration) Design industry is one of the most sophisticated high-tech industries today. The impact of VLSI industry is omnipresent in our day-to-day life in the form of smart-phones, PDAs, computers etc in modern communication era. It is also becoming an integral part in the field of medical instrumentation, biotechnology, automobile etc.

VLSI in India
The Indian VLSI industry is more than 20 years old with all leading semiconductor companies and all major EDA vendors having their operations here. However the industry’s maturity and position in the value chain from a global perspective is still behind the desired level, given the time and opportunities. It is exactly this problem that we at CVC are trying to solve. Our vision is to see a vibrant VLSI ecosystem that grows in the value chain through continuous technology updates, new innovations incubating out of India etc.

Who is CVC?
CVC is a VLSI Design & Verification company based in Bengaluru, India. We at CVC have a core team that has seen several successful ASIC tape-outs in domains such as Image processing, networking and communication. We have published several leading edge books among other achievements. We also have a credible history of participating in emerging standards, methodologies and challenges in the area of VLSI design. We are also very active on the academic links and participation in various conferences and publications across the globe. Our focus is in the following areas:

- Niche Hardware products to cater to Indian and APAC market
- Quality VLSI Design & Verification services to semiconductor design houses
- Innovation of various Automation techniques for regular tasks in a typical SoC design & verification
- Creating a talent pool that is critical to the success for creating a vibrant VLSI industry

Creating a vibrant VLSI Ecosystem
CVC is very keen in raising the bar of VLSI design in India across avenues such as:

- Promote the focus on local market needs and create products for the same
- Participating and defining next generation design and verification standards and technologies.
- Quality of delivery on any given task – by projecting the big picture to the large talent pool of young and enthusiastic engineers working in this domain.
- VLSI education, awareness
To achieve our mission we engage with three key stakeholders:

- Semiconductor industry
- Academia
- EDA industry

Through such complete, 360° partnership CVC aims to enable the VLSI industry by:

- Deploying new, emerging technologies in Design, Verification and implementation of ASIC/FPGAs.
- Exploring next generation technologies needed to tackle the VLSI industry challenges in 2010 and beyond.
- Bridging the gap bet’n industry and academia
- Helping working professional with necessary re-skilling and re-tooling.

CVC’s unique strength is in the equal attention we provide to all the three segments that we cater to. We also appreciate the diversified nature of this whole ecosystem with different players at different stages of VLSI adoption. We have products tailored for such diverse requirements.

**Who’s who of CVC**

CVC is lead by two industry experts Srinivasan Venkataramanan and Ajeetha Kumari who have more than 20 years of industry experience among them. They have worked in multiple ASIC designs throughout the whole VLSI design cycle from specification to post-silicon validation. They have also co-authored several leading edge books in the area of Design Verification among other achievements. CVC has been working with semiconductor design houses in India, Taiwan and Israel over the last 4 years in deploying leading edge technologies in VLSI design and verification.

**CVC Organization**

In tune with our vision and mission we are organized across three groups viz.

- TDG – Technology Deployment Group
- MCG – Manpower Creation Group
- ARG – Advanced Research Group
In VLSI, innovation and risk taking is the key to success. Being led by seasoned industry experts, CVC’s TDG focuses on deploying modern technologies in the area of Design, Verification, Synthesis, Prototyping and Low Power. As the technology evolves, modern practices, languages and methodologies need to be deployed in pioneer designs to move the industry ahead. CVC’s TDG undertakes this uphill task with great passion and never-say-die attitude. We offer the following skills to our customers – the semiconductor design houses and system design companies.

**Key strengths of CVC team:**

**SysArch**
- System Architecture
- HW-SW partitioning
- Micro-architecture
- Low Power considerations

**SysImplement**
- HW & SW implementation
- RTL development & compliance to specification
- RTL Synthesis
- Proto-typing
- HW-SW co-simulation, emulation

**DVArch**
- Spec-to-DV Architecture
- Consider current & future requirements
- Choosing implementation medium (HVL/HDL)
- Choose methodology
- Verification Plan – TestPlan + CovPlan + AssertionPlan

**DVAuthoring**
- Implement the DVArch in chosen language
- Methodology compliant code – BFM, xactors, checkers, coverage model etc.

**DVClosure**
- Implement TestPlan, add tests
- Debug failures, fixes
- Coverage closure

**DVReview**
- Usually done on an existing/prev gen TB
- Identify strong and weak areas
- Suggestions for next generation projects/derivatives
EDA related services offered
CVC has a vast experience working with several EDA vendors as customers as well as vendors. Our EDA solutions are offered to EDA vendors and also to the end users (semiconductor industry).

EDA tool & flow validation services
Given the complexity of EDA software, the core developers of the tools are usually not fully aware of the customer use models. Usually the users of the tools think from a different angle than the tool developers themselves. CVC serves as a bridge between the two given that we have both the expertise in-house. By doing so, we add value to EDA Vendors by validating their tools as per expected use models. This enables EDA tools to be highly successful in not only implementing languages as per LRM, but also satisfying (or even delighting) their customers.

EDA deployment services
As per recent statistics, most of the world-wide Verification engineering is centered in India. Hence it is a natural strategy for any niche EDA tool to test waters here in India. However given the early stages of a wonderful tool under making, a solid support team that can handle the customer relationship, evals and support is a must. However it is not very cost effective for every niche EDA company to start a local operation. Our TDG fills this gap with the right skill set and a scalable and flexible business model. We provide the necessary manpower and a dedicated support infrastructure. We undertake a range of activities such as:

• Support, Sales & Distribution to local market
• Potential customer identification and early engagement
• Migration related activities
• Engagement with Academic segment for long term benefits and to encourage research

EDA Tool flow optimization
Given the challenging economic conditions, every company is focused on consolidation and reducing costs. With complexity of verification and the huge marketing from various EDA vendors, the task of choosing the “right” tool set for the given task is becoming complex. Consider the following questions:

• Is your EDA tool budget shrinking?
• Is your EDA license renewal around the corner?
• Are you a start-up designing with FPGAs or structured ASICs and are unsure of which verification tool to procure?
• Are your current tools not able to scale up for your next generation ASICs?

Typically in smaller design houses, there are no tool-smiths available to evaluate each and every tool and pick the best for your task. This often leads to simple extension of existing tools as "Known devils are better than unknown angels" syndrome. However that might leave you behind your competition that has already moved on to more advanced solutions and methodologies.
CVC can offer you ways to reduce costs and yet stay ahead in the technology. We first understand your various factors such as design size, complexity, target application, team size and team skill set. We then present to you the various options available from different EDA vendors to meet your requirements and help you make the optimal choice. We can also drive a thorough tool evaluation on your designs.

**IP Development**

As part of our TDG, we create niche IPs for Verification. Our IP portfolio is usually customized to select customers and is driven by specific customer demands. Our team has experience in creating various forms of Verification IPs such as:

- **PIP** - Protocol IP (Assertions, assumptions and temporal performance metrics)
- **CIP** - Compliance IP (Data & temporal Coverage and compliance checklist)
- **VIP** - Verification IP (Generation, BFM and self checking)

As it is evident, our perspective of VIPs is quite different from rest of other IP providers. We work on close interaction with select customers to identify domain specific IPs such as Video processing, on-chip bus etc. In our experience, multiple times our customers have an existing flow and deploying a 3rd party VIP doesn't fit their bill easily. This is where our PIP & CIP come very handy - they can work in existing flow seamlessly.

**Engagement Model**

Our TDG has multiple engagement models ranging from simple resource augmentation to overall project management and tracking. Our team works either onsite or offsite depending on customers’ choice and our USP is **Quality and timeliness**. Being a smaller organization helps us to keep our costs viable and we pass on the advantage to our customers.

**Team Expertise**

Our TDG team has the expertise in the following areas:

- Pre-Silicon validation of block, sub-system and system level designs
- Domain expertise in:
  - Image processing,
  - Networking (Wireless, Ethernet) and
  - Communication
- Popular Verification methodologies such as OVM, VMM, eRM and AVM
- Verification expertise with SystemVerilog, OpenVera and E
- Assertion deployment with PSL, SVA & OVA
- Migration across tools – VCS, VCS-MX, , Modelsim, Questa, Aldec, Riviera, IUS/NCSIM
- Formal Verification – Model Checking
- Low power verification challenges and solutions
MCG - Manpower Creation Group

Given the highly dynamic and specialized nature of VLSI industry the technical requirements of this industry’s workforce is on an ever increasing curve. Our MCG is focused on this very issue. We sincerely believe that the MCG’s role is highly needed at various levels in the industry starting from the academia, the recent college graduates, young working professionals, mid-career engineers to the management level. Our MCG addresses all of these segments with innovative solutions tailored for each of this audience. We offer solutions that vary from focused trainings necessary for re-skilling to a full-fledged Engineering Incubation Centre. Currently our solutions in this space are as follows:

For academic institutions:
CVC’s MCG works closely with academic institutes to initiate various activities with end goal as to raise the bar in the area of VLSI design. The scope of these activities is fully customized depending on the maturity level of VLSI presence in the institute. We carefully choose the institutes to work with to ensure there is mutual benefit for both ends. Some of our offerings are:

- Delivering seminars on advanced VLSI topics such as ESL Design, Modern Functional Verification techniques, Low power design, Synthesis & timing closure and DFM (Design for Manufacturability) related challenges.
- Joint publishing, research on advanced topics in VLSI design
- Joint curriculum development and course delivery
- Encourage innovative project work, co-guide them and assist in getting it published
- Short term courses on relevant topics.
- “Train the Trainer” model to update the existing teaching staff in house.

For current students:
CVC’s MCG offers avenues to make your VLSI career dreams come true. We assist students to become a “VLSI Professional” by encouraging and assisting in the following forms:

- Short term courses on industry’s most relevant topics in VLSI.
- Providing industrial guidance/review in major project/thesis.
- Cultivating research mindset right at the budding stage.

For Recent College Graduates (RCG) (passed out students):
Our MCG group has established an innovative means to make a fresh graduate to be an industry ready VLSI engineer. Aptly named as “Anubhuti – Engineering Incubation Centre”, it offers a platform that incubates a fresh graduate student to realize his/her dream of a chosen VLSI career position. We first identify the level of the student, do a SWOT analysis and customize the incubation process to suit the needs of the individual. This is not a once-size-fit-all solution, rather a process of transforming a motivated student to realize his/her dream in VLSI domain.
Currently our EIC offers 2 paths viz.

- Certificate course on VLSI Front End design
- Certificate course on VLSI Functional Verification

Contact us via training@cvcblr.com for more details.

**For corporate & working professionals:**

Our flagship trainings started with corporate/individual trainings on specific skills in the functional verification domain. CVC has a long, proven history in this domain with clients such as NVidia, Synplicity, LSI Logic, TI, Quartics just to name a few. We deliver these trainings either onsite or at our premises depending on the requirement. Our MCG also conducts frequent seminars on various related topics usually on advanced technologies. Our training cart has been growing and is dynamic as per the demand.
ARG - Advanced Research Group

Continued research is the only way an industry keeps moving and VLSI industry is no exception. In VLSI, the key research participants are:

- Leading edge semiconductor firms (To highlight the pain points)
- Top academic institutions
- Stalwarts in the industry
- Various organizations such as IEEE, Accellera etc.

We at CVC take pride in participating in these activities from various angles. As we understand the pain-points through our various engagements, we bring them back and feed it to our ARG division. With our MCG, we have the necessary manpower to create prototypes, test vehicles etc. As we are well networked with all the key stakeholders, our ARG engages in various standardization committees representing the real users, work with local universities for more detailed research work and deploy the solutions as they become available via our TDG. This whole cycle is in perfect sync with CVC’s vision of creating a vibrant VLSI Ecosystem – Let’s have fun!

Currently our ARG is engaged in the following activities; needless to say this list is dynamic and is likely outdated as it is being read.

- SoC design automation – create SoCs in a more smarter way
- SoC design verification:
  - Intelligent Test Generation (ITG)
  - Debug automation
  - Redundancy elimination cross levels of Verification
- ACC – Automatic Coverage Closure
  - Closing the loop bet’n what is being observed and controlled
- Linking coverage and correctness – a huge gap as of today in ASIC Verification process
- Unified Coverage Interoperability – Accellera committee on UCIS
- Low power standards such as UPF, CPF
- Electronic System Level design & verification
- Accellera OVL standardization
  - OVL-PSL-VHDL development
  - OVL library verification
- eWG with IEEE 1647 committee
- Analog & Mixed signal verification
  - SystemVerilog Assertions for AMS

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As CVC is a 360° VLSI Company we have partnered with key stakeholders.

Sample:  
http://www.einfochips.com/partners.php

EDA Partner

Unity Program

SystemVerilog Catalyst Program

Harmony Partner

Univ Partner

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