SoftJin
Enabling Electronic Design

SoftJin's Design and EDA Solutions for Semiconductor Design Teams

There is increasing consumer demand for semiconductors with more functionality, lower cost and shorter time to market. While the manufacturing technology is there to support higher transistor count chips, the design technology has fallen behind. The key reason behind this gap is the increasing design complexity - both Silicon complexity as well as the System complexity. Leading semiconductor and SoC companies are tackling this increasing design complexity by creation of new design methodologies that enable re-use and decrease the uncertainties associated with the design and verification process. These new methodologies can become a reality only if they are supported by newer design tools and by trained design teams who have the requisite skills to make best use of these methodologies and tools.

SoftJin partners with semiconductor companies and helps them deal with the increased design complexity by providing:

- Differentiated outsourced Design and Verification Services
- Customized EDA tool and Design Flow development services

Design and Verification Services

SoftJin has strong expertise in System and RTL Design and Verification and provides following key services to semiconductor design teams:

- Virtual prototyping of the system
- RTL Design and Verification
- Development of prototype in FPGA platform

Virtual Prototyping

As the complexity of the design increasing the time required for RTL design and verification is also increasing. Virtual prototyping is a key step in ASIC/SoC development to have quick design, verification and performance analysis of the system before the actual RTL design and verification has started. SoftJin can offer the following activities in virtual prototyping:

- Development of behavioural model, transactional level Model (timed, untimed, cycle) of the system and testbenches
- Performance analysis (throughput, bandwidth, bus load, CPU utilization etc.) and optimization of the system
- Extraction of the verification output which can be used to compare the output generated during RTL verification

RTL Design and Verification

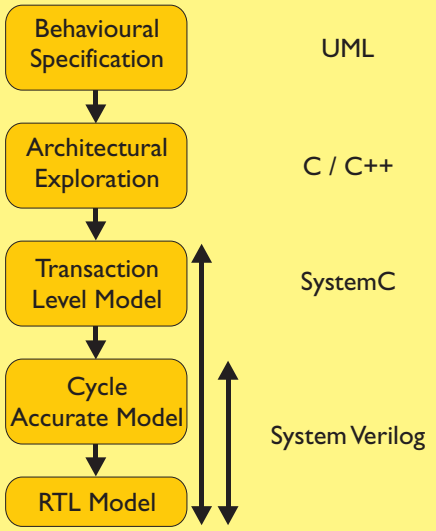
SoftJin can help semiconductor developer in concentrating the design of the core components and outsourcing the other activities including:

- Development of verification modules like BFM, driver, constrained random generator, monitors, checker etc.
- Development and set up of automated verification system
- Verification and integration of third party IPs

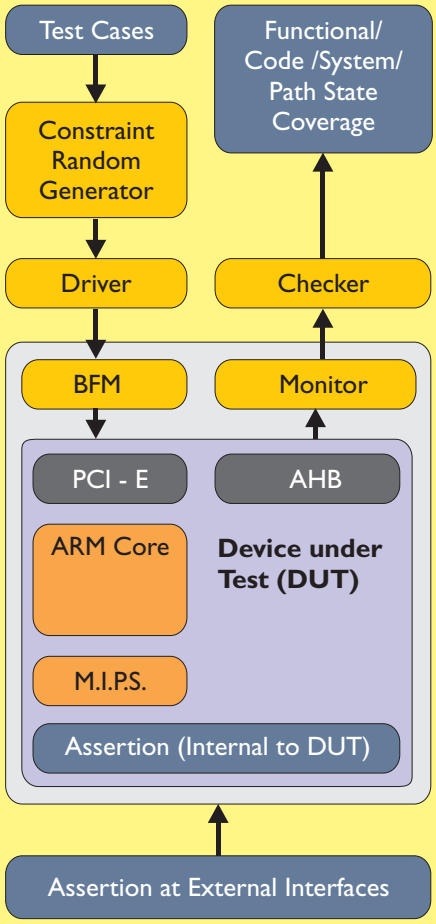
FPGA/ Structured ASIC Prototype Development

Due to increase mask cost and other initial investment requirement the cost of failure in ASIC development has increased dramatically. Also due to complexity of the design the probability of failure in the ASIC has also increased. Therefore, prior to committing to Silicon, development of prototype in FPGA or Structured ASIC platform has become a necessary step for ASIC developer. Over here, SoftJin can develop the ASIC prototype on FPGA platform and recommend necessary changes after a rigorous performance analysis. SoftJin has expertise in design and implementation on several FPGA platforms including Xilinx, Altera etc.

SoftJin's Offerings in Virtual Prototyping



SoftJin's Verification Skills



EDA Software Development Services

Semiconductor Design Teams need to devote special attention to having access to customized EDA tools and flows for various reasons:

- **Need to automate unique methodologies -** The unique and proprietary design methodology developed by a semiconductor design company will provide the design productivity advantage over competition. In order to automate these unique methodologies, companies would need tools with specialized feature and performance requirements.

- **Need to get Silicon success at finer geometries -** Silicon success at geometries such as 65 nm and 45 nm requires closer interaction between the design and manufacturing teams. This interaction would need to be captured in the next generation DFM/DFY tools. The IDMs, having both the design and manufacturing knowledge base, are well placed to bridge that gap and develop customized tools for their in-house use without having to divulge their proprietary know-how to external parties.

- **Need to decrease EDA tool ownership costs -** For licensing a commercially available off-the-shelf tool a semiconductor design company pays in direct proportion to the number of license seats. Add to that the cost of maintenance (both payable to EDA vendor and staff cost). Whereas the total cost of ownership for in-house EDA tools is independent of the number of designers and thus will provide EDA tool cost savings as the design teams grow

SoftJin partners with in-house EDA and Design groups in semiconductor and provides them with the competitive edge through design and development of customized tools that address the challenges listed above. SoftJin's EDA tool development group has a rich and extensive experience of working with the internal EDA groups at large system design houses and has developed customized EDA tools across the spectrum of design flow; from System level design tools down to post layout DFM related tools. Our services for in-house CAD groups include

- New Tool development– SoftJin develops new EDA software tools for the specific requirements of its customers. Herein, SoftJin also develops point tools and integrate those into the existing tool flow of the customers. Usually exclusively developed in services mode, SoftJin transfers the source code to the customer.

- Tool enhancement services– SoftJin enhances the existing in-house tools of the customers by incorporating specific features or enhancing the performance of the tool. Any ongoing maintenance and customization of existing tools of customer can also be undertaken by SoftJin.

Design Methodology and Design flow development Services

SoftJin offers the following services as part of its Design Methodology Services Integration and Qualification of new design flows

- Tool interoperability and customization
- Design and Library Infrastructure development
- Validate design flows and methodology through test designs
- Scripting for ease of use, data translation and other EDA tool functions
- Netlist converters, parsers and other data converters
- OpenAccess adoption services – Data migration and tool integration

SoftJin has strong background of EDA tools development which gives us the real insight into the functionality of tools which goes way beyond the tool knowledge to an algorithmic level. This expertise with a versatile team consisting of people with experience across the design spectrum and vendor-neutral background has made SoftJin a natural choice for helping you in tackling the design flow challenges.

EDA Skills

- **Fundamental Computer Science -** Techniques for solving complex EDA problems
  - Handling huge design data
  - Parallelization
  - Compiler development
- **Software Development Skills -** Algorithm and Data Structure Design
- **Programming -** C/C++, Perl, SKILL, TCL
- All major **Hardware Design languages and design formats**
- **GUI development**
- Familiarity with all **major commercial EDA tool flows**

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