

## SoftJin's IP Offerings

### IP Development Services

SoftJin offers differentiated IP Development, Customization, Verification and Qualification Services to semiconductor companies who need to use IPs for their own product development or provision IPs as part of their silicon platform offerings to their customers. Our IP development services enable our customers to improve their design productivity as they undertake complex product development across domains.

### IP Deliverables

The delivery kit for a SoftJin IP consists of the following

#### 1. Documents

- Data Sheet and User Documentations
- Verification Plan
- Verification results
- Functional Coverage, Code Coverage Report
- RTL source code document

#### 2. Code

- C/C++, RTL Code
- Test Benches
- Design Constraints File (e.g. SDC)
- Simulation and Synthesis Scripts

SoftJin's tried and tested IP development and verification methodology ensures high quality of the delivered IP.

SoftJin can package the developed IP in different ways including behavioral model (non-synthesizable), pre-compilation simulation library in order to provide flexibility to the customer for evaluation.

### Business Model

SoftJin offers IP development service under various business models including:

- Develop IP as a service: IP right will be retained with the customer
- Joint development - Both SoftJin and customer share the IP rights
- License IP as a product: SoftJin has sole right on the IP

### IP Verification/ Qualification Services

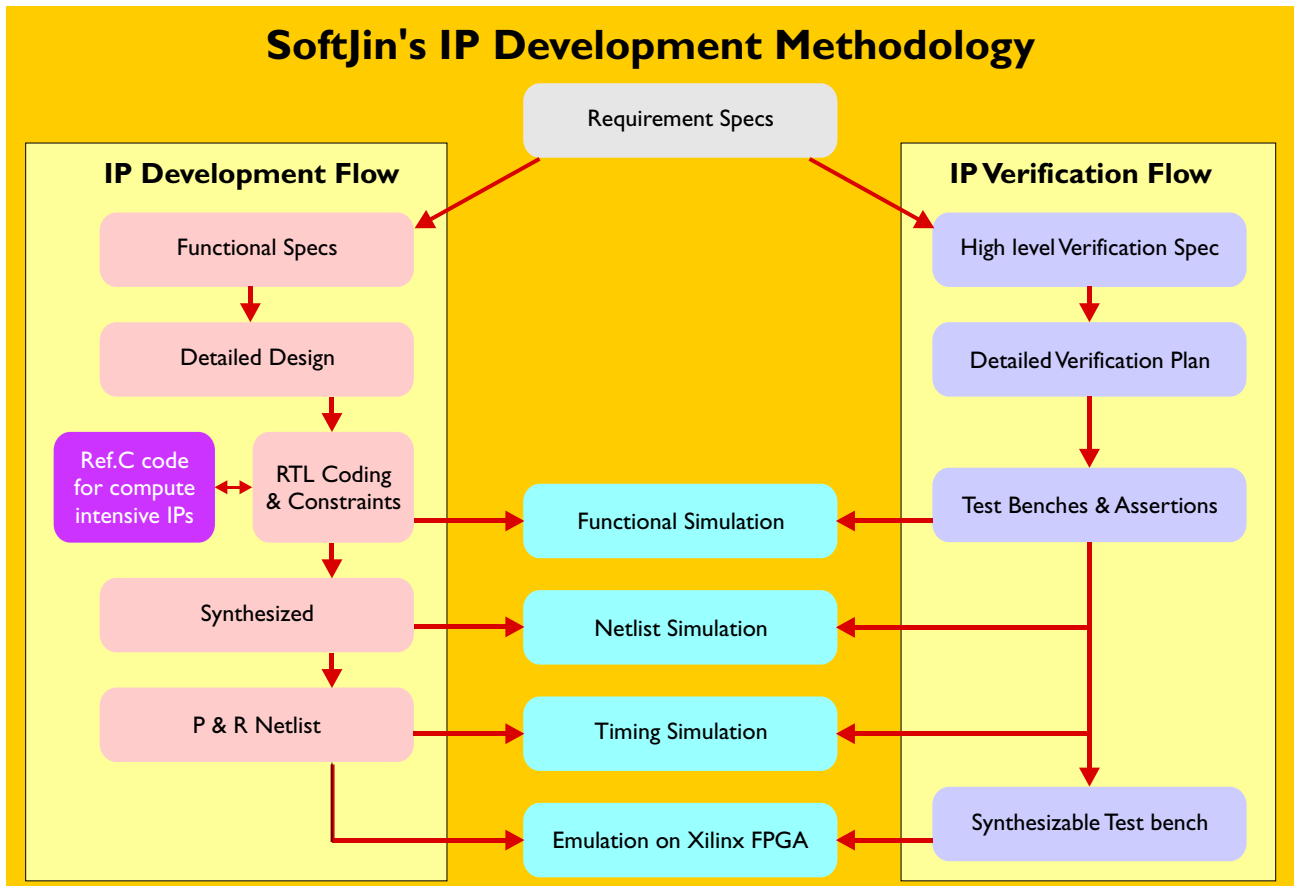
SoftJin also help customer to verify/ qualify IPs procured from third party vendor.

### IP Qualification Services

- IP documentation
- IP Integration and ease of re-use assessment
- Design and Verification Quality
- Analysis of Verification results

### IP Verification Services

Develop Test benches based on the protocol/ standards used in the IP. to verify the functional correctness of the IP. These are in addition to test benches provided by IP Vendor



## IP Customization

Customization of the IP according to the architecture of a particular platform is the key enabler to increase the IP performance on that particular platform. Especially performance of the computational intensive IPs can be increased dramatically by customization. SoftJin offers customization of IPs on different programmable platforms including FPGAs and multi-core processors. IP customization benefits include:

- Better speed of operation
- More effective utilization of the resources on the underlying platform such as LUT, BRAM blocks and MUX (for FPGA platform)
- Less power consumption

Some of the customization steps involved during IP customization include:

- Usage of hard macros like multiplier, DSP slices according to the platform architecture at the time of RTL modification
- Architecture specific PLL/ clock manager configuration in RTL logic
- Tool-flow specific annotation on RTL code as well as on the configuration file
- Tuning the parameters for synthesis, P&R etc. according to the tool flow and target application

SoftJin also verifies the IP in customer design flow and on customer prototype board to ensure that the IP works seamlessly in the actual application.

## IP Customization Service

RTL Modification for Customer Architecture

Creation of SDC constraint files, scripts etc.

Synthesis, STA, P&R using customer tool flow etc.

Functional and Timing Verification at Various Stages in Customer Design Flow etc.

Design Verification on customer prototype board etc.

IP Benchmarking, QoR analysis on other commercial platform

## SoftJin's IP Portfolio

### DSP

- FIR
- FFT/ IFFT
- DCT/ IDCT

### Arithmetic Functions

- RAM based multiplier
- Matrix multiplier
- Floating point addition, subtraction, multiplication

### Audio/Video

- PAL/ NTSC Encoder
- Image Arithmetic
- Edge Detection
- Convolution

### Memory Controller

- ZBT SRAM Controller
- NAND Flash Controller

### Interfaces

- I2C
- RS232
- Text LCD Controller
- Graphics LCD Controller
- SPI Interface with ADC
- SPI Interface with DAC

### Others

- Fast String Machine
- Bloom Filter
- SPI Master
- AES Encryption

**SoftJin**

Enabling Electronic Design

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