

# Synopsys Professional Services, Smartech Group

The more

# complex

your IC design,

# the simpler

your choice.

## Smartech Group

Smartech Group is a design center of Synopsys Professional Services located in Tampere, Finland. Before the acquisition by Synopsys in February 1999, Smartech was one of the leading independent digital ASIC design service companies in the Nordic countries. With the long experience in digital ASIC design, Smartech Group remains to be a unique service provider in the field of design services.

Smartech Group provides turnkey design services. This means that the customer can concentrate on its core competence areas like system design and marketing while Smartech Group takes the responsibility of specifying, designing and verifying the ASIC-circuit or circuits needed in the customer's system. This strategy has been successful and our customers have welcomed us to complement their competence with our special knowledge and experience. So far Smartech Group has designed over 115 ASICs and over 200 FPGAs.

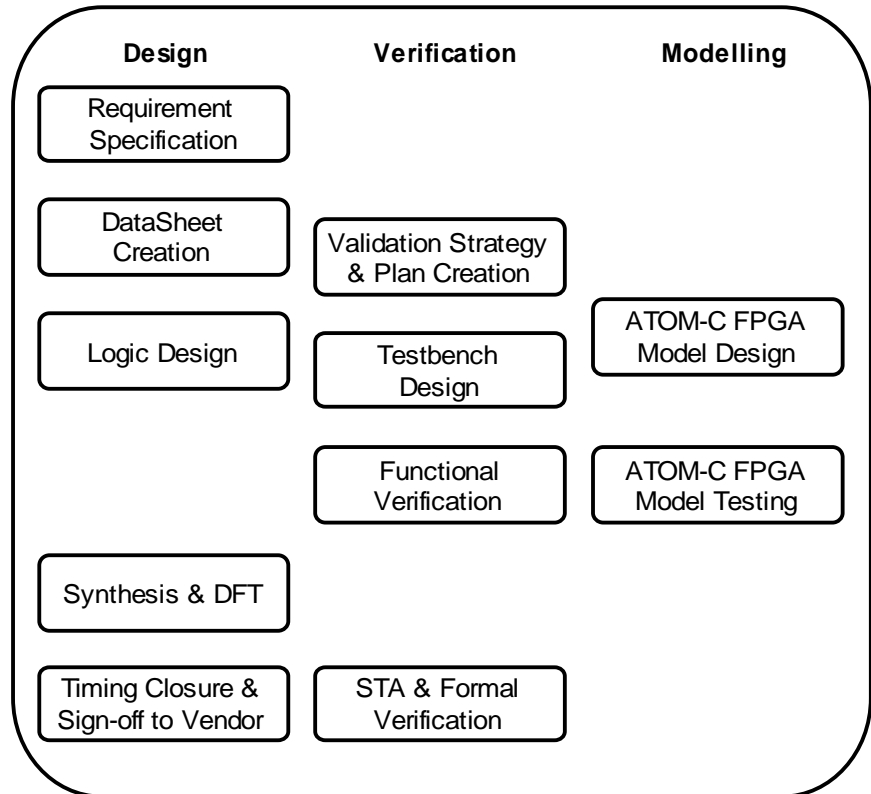
## Turnkey Concept Benefits

For the customer, the turnkey design concept provides a unique service. The turnkey approach releases customer's critical resources to the tasks of its core business such as product marketing, system design and specification.

The design task of Smartech Group can be supplemented with the specification and design work done by the customer. The level of integration can be easily increased by e.g. converting and integrating an FPGA designed by the customer. The design task can be divided between the customer and

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Smartech Group in any practical way. The customer can also provide a system-level testbench for the ASIC designed by Smartech Group. This way the customer's system knowledge can be used to verify the design as a part of the overall system.



*Design flow of Smartech Group. The ISO 9001 certified design flow enables simultaneous engineering with verification and modelling and maximizes the time-to-market benefit with well-established quality assurance.*

## ATOM-C Concept

ATOM-C is a platform independent ASIC modelling concept. ATOM-C modelling can be based on a commercial modelling platform or a customized FPGA board that is always designed for the needs of the specific project. ATOM-C is not just an FPGA modeller, but a proven way for the development and usage of the modeller.

ATOM-C FPGA modelling is used in most of our ASIC projects. This has enabled us to achieve an unparalleled first-time success rate in ASICs.

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## Our Customers and Experience

Our customers include all the major electronics companies in Finland, including various Nokia, ABB and Tellabs departments as well as many small and medium sized companies. At present, some 25% of our revenue comes from exports, mainly to the Nordic countries and Central Europe. The portion of exports is growing constantly.

The experience from 115 completed designs has made us a capable partner for various application areas. Our customers have welcomed our broad experience from many applications to complement their system knowledge for the application in question.

### We have for example:

- designed various SoCs with soft and hard macro microprocessor cores (e.g. Hitachi H8, Intel 80188 and ARM7TDMI).
- implemented many complex communication systems for various telecommunication standards (e.g. PDH, SDH, ATM, mobile communication etc.)
- developed a custom RISC processor core and used it to replace an external DSP processor.
- implemented LAN-standards like Ethernet, serial interfaces like USB with appropriate system bus interfaces for various applications.
- replaced DSP processors with hardwired logic that performs the same functions, but at higher speed and using less power.
- designed ultra-low power ASICs that run for days or even weeks just from a super-capacitor in back-up mode.
- designed graphics controllers, display drivers, motor controls for DC, AC and stepper motors, real-time clocks, serial communication controllers for many different standards, data encryption devices, processor peripherals...

Currently, the largest designs contain several million gates of logic with additional memories and megamacros.

## Feasibility Study - Putting It All Together

A feasibility study before a project forms the foundation of the customer's project plans, giving a unique opportunity for an objective and realistic review of circuit characteristics. Smartech Group's well established design process enables tailor-made project planning for each customer, since the basic design work has been systemized over the years.

The feasibility study concept contains an analysis of the circuit's requirements, gate count, power consumption and other technical characteristics. Additionally, a preliminary project plan and risk analysis is delivered together with a project quotation. The effect of the feasibility study is seen in a shortened schedule, reduced costs and a smoothly running project as all the critical issues have been analyzed early on.

### For more information:

<http://www.synopsys.fi>

The logo for Synopsys, featuring the word "SYNOPSYS" in a bold, blue, sans-serif font with a registered trademark symbol (®) to the upper right.