

Synopsys and Abilis Systems

Abilis Achieves First-Pass Silicon Success for Secure Media Processor Using Synopsys DesignWare IP and Lynx Design System



The combination of silicon-proven DesignWare IP products, the expertise of Synopsys' design consultants and the Lynx Design System saved us three months of product development and enabled us to achieve first-silicon success."

Pierre-Marie Signe
 Principal Design Engineer, Abilis Systems

Business

Abilis Systems, an ALi Group company, is a fabless semiconductor company headquartered in Geneva, Switzerland. Abilis develops and manufactures RF, digital and secure integrated circuits for the Digital TV (DTV) market.

Challenges

- ▶ Meet aggressive project schedule for media processor
- ▶ Reduce integration risk with reliable IP
- ▶ Accelerate development of implementation design flow

Synopsys Solution

- ▶ Proven DesignWare® IP including:
 - ARC® 605 and 770D Processors
 - Interface IP for AMBA and Ethernet Interfaces
 - Embedded Memory Compilers
 - STAR Memory System® integrated memory test and repair solution
- ▶ Lynx Design System for RTL-to-GDSII design environment
- ▶ IP integration services from Synopsys Professional Services

Benefits

- ▶ Achieved first-pass silicon success and met aggressive time-to-market goal
- ▶ Reduced integration risk with silicon-proven DesignWare IP and expert IP integration services
- ▶ Accelerated deployment of complete SoC design flow by three months

Overview

Abilis' TB100, an 8-channel broadcast-to-IP secure media processor, powers headless gateway platforms that deliver high-quality television to mobile devices and IP-based receivers in the house.

Targeting the competitive DTV consumer market, Abilis had a very narrow timeframe to produce the initial prototype of their next-generation TB100 DTV chip and then take the evaluated prototype to production. Additionally, because they were designing in a node with which they had no prior design experience, they needed proven processor and interface IP along with an integrated tool flow and development platform that would reduce risk while enabling them to meet their tight schedule. Abilis was able to fulfill these requirements with Synopsys' silicon-proven DesignWare Interface IP, ARC Processors and tools, Synopsys' consulting services and Lynx Design System.

High-Quality DesignWare IP

Abilis knew that with limited time or resources to develop IP in-house, they would need to select proven and reliable third-party IP for their media processor design to meet their aggressive schedule. Having used Synopsys DesignWare Interface IP and ARC Processors successfully in previous designs, they were confident that integration into their latest design would be straightforward. “We were facing the new challenge of designing on a more advanced process technology node than we’d used before, and didn’t want to put the design at risk with unproven IP,” said Pierre-Marie Signe, Principal Design Engineer at Abilis. “We selected Synopsys’ DesignWare Embedded Memories, STAR Memory System, IP for AMBA interconnect, Ethernet IP and ARC 605 and 770D Processors because, as long time users of Synopsys’ IP products, we’ve successfully integrated many of the IP into previous designs and knew we could trust the quality and reliability of the IP.”

The use of Synopsys DesignWare Embedded Memories was fundamental to boosting performance, and with the integrated memory test solution Abilis did not have to incur the performance and area overhead of many add-on solutions. A key factor in Abilis’ selection of the ARC 770D Processor was the Linux acceleration package, which supports Linux porting. The availability of a complete Linux ecosystem allowed the design team to leverage Linux-based application software to quickly build complex systems using open source components, which shortened their product development cycle and enabled them to hit their time-to-market window.

Although they had not previously used Synopsys’ silicon-proven Ethernet MAC10/100/1G Universal Core, Abilis was familiar with companies that had successfully integrated the IP into their designs. With no time to evaluate other products, they selected Synopsys, the partner they trusted to provide easy-to-integrate IP solutions.

Development Platform and IP Integration Services

Synopsys’ Lynx Design System provided Abilis with a pre-validated RTL-to-GDSII design environment so they were better able to manage the complexity of their design project. Lynx helped them maintain visibility into key project metrics and expedite their implementation.

To further assist in the development of their complex design, Abilis leveraged the expertise of design consultants from Synopsys’ Professional Services. Synopsys Professional Services helped the Abilis design team ramp up quickly, enabling them to meet their aggressive time-to-market goal. With the combination of Synopsys Professional Services and the Lynx Design System, Abilis was able to quickly deploy their 65-nm design flow in six weeks, reducing their development schedule by at least three months.

“By using Synopsys IP, tools and services, we were able to complete our design well within our schedule and achieve first-pass silicon success,” said Signe. “Our continued success using Synopsys products makes us even more confident that the Synopsys tool flow and DesignWare Interface IP and ARC Processors will meet our design requirements in upcoming projects.”

“One of the most valuable contributions of Synopsys’ DesignWare IP is that it works the first time. We did not want to spend our valuable resources on developing IP, so using easy-to-integrate, proven IP from a trusted partner was critical to our success.”

Pierre-Marie Signe
Principal Design Engineer, Abilis Systems