

Synopsys and Fudan Microelectronics

Shanghai Fudan Microelectronics Decreases Development Cost and Time-To-Market of Smart Card with Synopsys HAPS FPGA-Based Prototyping System



Synopsys' reputation as an established provider of FPGA-based prototyping solutions was a key factor in our decision to use HAPS for our high-end smart card integrated chip design. The flexibility of Synopsys' HAPS system enabled reuse for several projects, ultimately reducing our development costs."



Wang Jiaqian

Engineering Manager, Shanghai Fudan Microelectronics Group

Business

Shanghai Fudan Microelectronics Group, a leading company specializing in the design and development of ASICs, develops microelectronics in China for security and identification, NVM, smart meters and special analog circuits.

Challenges

- ▶ Design high-end smart card integrated circuit with 50-100MHz frequency
- ▶ Hardware design verification of MCU and multiple coprocessors

Synopsys Solution

- ▶ HAPS[®] FPGA-Based Prototyping Hardware Systems

Benefits

- ▶ Flexible HAPS hardware design accelerated system validation of real-world I/O interfaces
- ▶ Excellent technical documentation; zero interaction with customer support during the hardware validation process was needed

Overview

Fudan Microelectronics has over 10 years of design experience in smart meters and related products; developing a variety of dedicated MCU chips to meet the features required for China's national network. Fudan Microelectronics needed a solution that could support the millions of ASIC gates required for their security chip targeted for use in high end bank and identification cards while meeting their design cycle requirements. To support its goal, Fudan Microelectronics selected Synopsys' HAPS FPGA-based prototyping hardware for its high performance capabilities, flexible connector technology and reuse across multiple projects.



The quality of the HAPS system exceeded our expectations and enabled our designers to be completely self-sufficient through top notch product documentation. Synopsys is an outstanding supplier, living up to their excellent reputation.”

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High-Quality HAPS Hardware

The level of complexity in Fudan Microelectronics smart card solutions increased both cost and schedule risks due to the need to verify real-world design scenarios. To validate its smart card was performing according to specifications early in the development cycle; Fudan Microelectronics used Synopsys' HAPS hardware with its HapsTrak II connector technology to run its design at near real-time operating speeds using real-world I/O interfaces, such as serial, USB, SPI I2C and RF. The flexibility of the HAPS hardware coupled with HapsTrak connector technology, accelerated software development, hardware/software integration and system validation tasks for Fudan Microelectronics' design team. The completeness of Synopsys' FPGA-based prototyping solution reduced Fudan Microelectronics' ASIC design time, shaving months off their overall development schedule.

Leading Supplier

Synopsys' premier reputation as a commercial provider of FPGA-based prototyping systems was instrumental in Fudan Microelectronics' decision to select Synopsys HAPS hardware. The accuracy and completeness of Synopsys' technical documentation helped Fudan Microelectronics efficiently verify that their ASIC implementation met their design specification. Fudan Microelectronics was able to design, develop and test their ASIC without a single call to customer support. Selecting Synopsys HAPS allowed Fudan Microelectronics to focus its engineering efforts on the validation of their security chip instead of the design of a custom validation platform, reducing the total engineering cost and effort of their project.

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Figure 1: HAPS Family of FPGA-based Prototyping Systems