STRENGTHENING U.S. LEADERSHIP IN CHIP DESIGN

Semiconductor design is key to driving innovation, but challenges to U.S. leadership from global competitors require policies to incentivize the U.S. chip design ecosystem

Chip design is a key activity behind the function and value of a semiconductor device. The design process consists of defining the product requirements for the chip's architecture and system, as well as the physical layout of the chip's individual circuits, which ultimately enable semiconductors to receive, transmit, process, and store ever-increasing amounts of data for today's digital world. Chip design is a highly complex, interdisciplinary process that involves years of R&D, hundreds of millions of dollars of investment, and thousands of engineers.

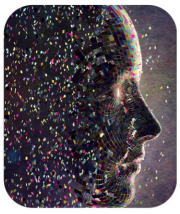
There are three main types of companies engaged in chip design:

1) **Fabless firms** that focus on chip design and partner with a foundry for fabrication
2) **Integrated device manufacturers** that both design and manufacture their own chips
3) **Original equipment manufacturers** that design chips for their own end products, such as smartphones, cars, and data centers, and outsource fabrication.

An integral part of chip design are companies that develop the IP "building blocks" and electronic design automation (EDA) software and hardware used for complex modeling needed in chip design.

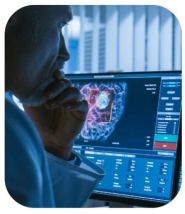
WHY IS U.S. CHIP DESIGN LEADERSHIP IMPORTANT?

The U.S. cannot have technology leadership without design leadership. Advances in chip design have led to breakthroughs in semiconductor-enabled technologies that have been a driving force behind 21st century U.S. technology leadership. This leadership provides the U.S. with the technological edge to be the "first mover" on new innovations in countless industries and to secure the economic and security benefits resulting from this leadership. Global reliance on U.S.-designed chips is an important strategic advantage that must be maintained.


AI


Energy


Defense


Healthcare


Agriculture


5G/6G


Transportation

Other Key Advantages from U.S. Chip Design Leadership

Cycles of Innovation. Advances in design and design tools in turn drive innovation in chip manufacturing processes and equipment. Importantly, American design leadership ensures software, services, and products are based on U.S.-originated semiconductor technologies.

Security and Control of IP. Sophisticated design techniques lower the risk of malicious tampering and supply chain interdiction—for example, by protecting critical design information and enabling traceability and control of design IP.

Influence in Setting Standards. U.S. chip design leadership enables U.S. companies to lead the technology standards (e.g., standards for interoperability in Wi-Fi, Bluetooth, and 5G wireless technologies) that set the technical "rules" for entire industries.

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