

System Innovation for Aerospace, Defense and Government

Leading-Edge EDA, Semiconductor Intellectual Property and Software Integrity



Developer and User Challenges

- Performance in a small package – low size, weight and power (SWaP)
- Long-life and upgradability with high-reliability, security, and safety
- Reliability in a range of operating environments, from ground to space
- End-to-end support: from the IoT network edge to the datacenter
- Process massively parallel sensor data with low latency
- Secure, high-performance, and low-power artificial intelligence processing
- Create robust, safe, and secure derivatives fast

Create Superior Mission-Critical Systems and Semiconductors Faster

Delivering electronic design automation and semiconductor intellectual property [solutions for use by Aerospace, Defense and Government customers](#), Synopsys helps you build high-performance, low-power systems that are secure, safe, and reliable.

Synopsys goes beyond first-time silicon success to support developers in:

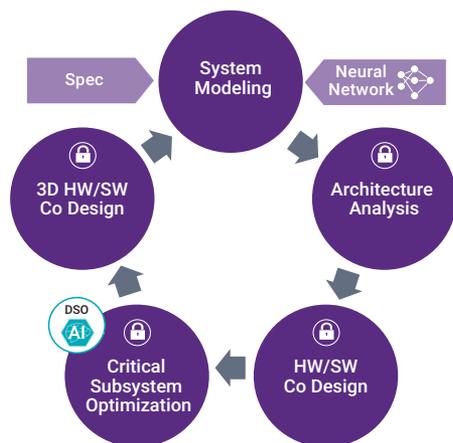
- Creating the high performance and low size, weight, and power system
- Achieving secure, resilient, safe, and reliable designs
- Increasing longevity and enabling in-field upgradability
- Enhancing software quality and security through application security testing
- Improving traceability and compliance to meet design-assurance standards such as DO-254 and DO-178C
- Lowering device, system, and program risk via prototyping and pre-validated IP

With a growing heritage in high-reliability applications including government, aviation, space, defense, automotive, industrial, and data centers, Synopsys customers include the US Government, all top federal and defense contractors, civilian agencies, and the intelligence community.

Solutions for State-of-the-Art Semiconductor Development

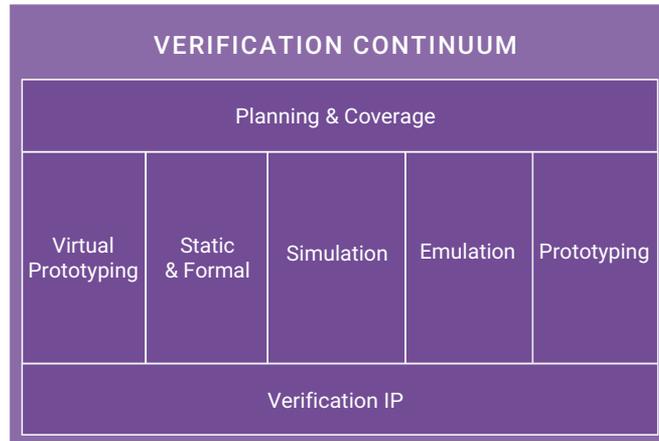
Synopsys tools, IP, and services support design teams in building semiconductors for a range of power, performance, area, and security:

- For design of digital and analog integrated circuits, [IC design](#) tools help customers optimize ASIC and SoC development utilizing artificial intelligence.
- For Heterogenous System-in-Package designs, [3DIC Compiler](#) supports complex package interconnect with power and thermal design.
- For [FPGA design](#), Synopsys offers synthesis to spin cross-architecture derivatives quickly.
- Synopsys' services team supports development from early modeling to architectural analysis and hardware/software co-design.



Synopsys Tool Flow and Services for 3DIC

Accelerating Microelectronics Design Verification



Synopsys offers [verification solutions for aerospace and defense](#) that increase productivity and reduce code defects, while improving security, safety, and reliability.

The Verification Continuum is a unified verification flow with code coverage, testbench and debug automation. It also includes simulation, formal property checking, emulation and rapid prototyping.

Synopsys also has aerospace/defense-targeted verification solutions, such as support for [DO-254 compliance](#) and fault injection to support radiation hardening and secure designs.

Software Quality and Security for the Public Sector

[Software quality and security](#) are critical for aerospace, defense, and government customers. Ever rising software development costs have come with the added challenge of mitigating the risk of cyber-attacks, data breaches, cyber espionage, etc. To counteract these persistent threats, government agencies and contractors use Synopsys tools to:

- Improve quality, security, and safety
- Increase developer productivity
- Minimize costs and time to market
- Achieve regulatory and standards compliance

Reduce SWaP with Design Technology Co-optimization

Synopsys enables developers to reduce SWaP with a unique tool feedback loop to optimize a design for a targeted manufacturing process. The design technology co-optimization ([DTCO](#)) methodology helps reduce cost and time-to-market for advanced process development.

The Synopsys DTCO Solution accurately models timing and power to deliver the highest reliability design with minimal IC over-design and design tool runtime.

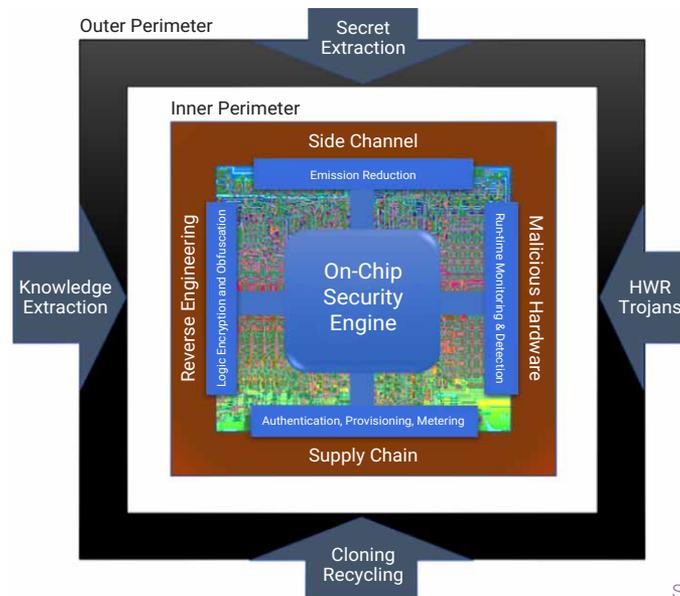
Improve Longevity, Manage the Lifecycle and Reduce Risk

Modern government, aerospace, and defense systems can last for decades. Synopsys is unique in its ability to manage the lifecycle of an integrated circuit, such as predicting when maintenance or replacement is needed. When replacement is required, Synopsys' pre-validated [semiconductor IP](#) is a low-risk way to upgrade functionality. If the IP is part of a subsystem that is a field replaceable unit, system integrators can eliminate obsolescence and extend system life.

Rapid Deployment with Prototypes and Emulation

The US Government has called for agility in defense acquisition with a focus on rapid prototyping^[2]. Synopsys offers parallel simulation, FPGA [prototyping](#) and server-level [emulation](#). To reduce analog/mixed-signal (AMS) semiconductor development time, Synopsys is executing the DARPA ERI Posh Open-Source Hardware ([POSH](#)) program to enable parallel software/hardware development with less test iterations while prototyping real-world interfaces.

Government Program Heritage



Source: DARPA AISS program

As an experienced US Government contractor, Synopsys can help you imagine and create the future. Synopsys is a prime contractor for the DARPA Automatic Implementation of Secure Silicon ([AISS](#)) program and a sub-contractor for the Rapid Assured Microelectronics Prototypes ([RAMP](#)) program. The combination of these programs is expected to provide measurable confidentiality in high-integrity design environments. Another example is the Supertools program, where Synopsys has partnered with IARPA to automate design for superconducting electronics ([SCE](#)) to go beyond the present physical limits of high-performance, energy-efficiency, and low-latency computing.

Building Blocks for Digital Transformation



Synopsys provides expertise, solutions, ingredients, and automation so government, aerospace, and defense customers can build the next generation of mission-critical electronic systems for modern applications such as, servers, 5G, autonomy, edge computing, and AI.

Please visit our web page and register to receive further information: [Synopsys Aerospace and Defense](#), [Subscribe to the A&D Newsletter](#).

Footnotes

- [1] DOD's Third Offset Strategy: what man and machine can do together—Defense Systems
- [2] The Importance of Early Prototyping in Defense Research, Engineering, Acquisition, and Sustainment | DSIAC Prototyping the future | Article | The United States Army DoD Prototyping Guidebook, v2.0.pdf (dau.edu)
- [3] Recognized by independent analysts including Gartner® and Forrester® as a leader in AppSec testing