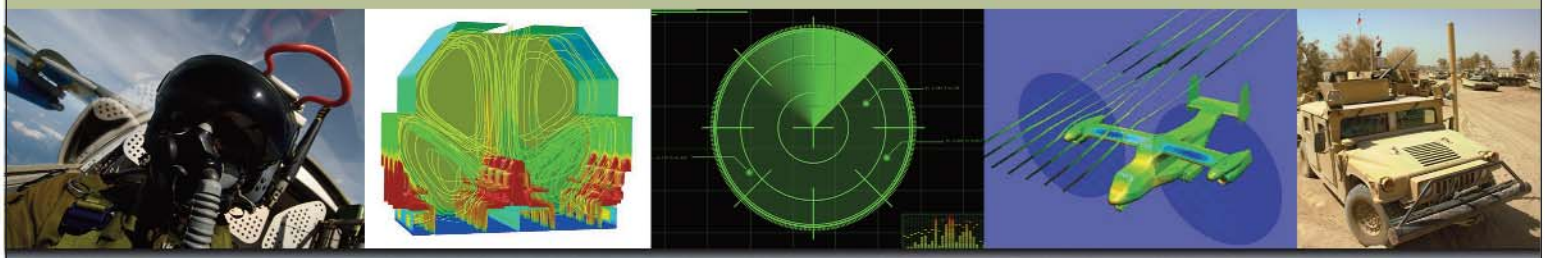
ANSYS®

Engineering Simulation Solutions for the **defense** Industry



With the unequalled depth and unparalleled breadth of engineering simulation solutions from ANSYS, companies in the defense industry are transforming their leading-edge design concepts into innovative products and processes that work. Today, 97 of the top "*FORTUNE* 100" industrial companies invest in engineering simulation as a key strategy to win in a globally competitive environment. They choose ANSYS as their simulation partner, deploying the world's most comprehensive multiphysics solutions to solve their complex engineering challenges. The engineered scalability of our solutions delivers the flexibility customers need, within an architecture that is adaptable to the processes and design systems of their choice. No wonder the world's most successful companies turn to ANSYS — with a track record of almost 40 years as the industry leader — for the best in engineering simulation.

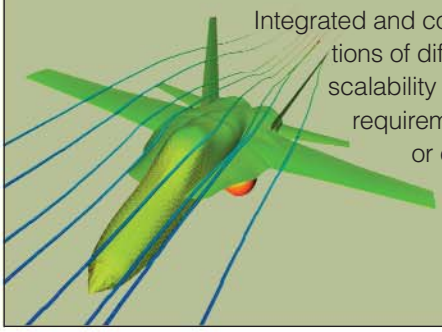
Challenges and Solutions

Over the past decade the defense supply chain has undergone major changes. Traditional threats have evolved to encompass current counter-terrorism and homeland security issues. This has considerably modified the usage and design constraints of modern defense systems, putting an increased emphasis on early detection and fast response. Combat has shifted to urban guerilla and highly targeted operations, generating a growing need for high survivability and adaptability. Today's defense companies are required to provide systems, such as drones, that will integrate perfectly into international joint forces' information networks composed of land, sea and air systems. Finally, increased budgetary constraints mean that projects must be performed faster and more efficiently than ever before.

As a leading provider of Simulation Driven Product Development™ software, ANSYS helps defense companies meet these requirements. ANSYS® Workbench™ analyzes designs in a virtual environment, enabling engineers to quickly evaluate performance in fields ranging from terminal ballistics, radar cross-section, and survivability to IR signature, missile aerodynamics or reactive armor.

Real-World Simulations

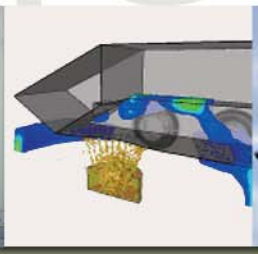
The defense industry pioneered the use of engineering simulation software to increase the efficiency of its systems. The cost and difficulty of real-life testing motivates engineers to use simulation in order to research, design and optimize new systems before they are prototyped or field-tested. Engineering simulation provides design insight, enabling more efficient and successful testing. Many defense companies rely on software from ANSYS to accurately simulate efficiency, survivability and other mission-critical project dimensions.



Integrated and coupled comprehensive multiphysics capabilities from ANSYS account for the interactions of different physical phenomena in the industry's highly interdependent systems. Engineered scalability enables individual users, departments or entire business units with a variety of analysis requirements to perform serial or parallel computations on individual laptops, compute-clusters or other enterprise-wide computing resources.

defense






"BAE Systems is using software from ANSYS to provide integrated, multiphysics solutions for customized applications to meet the needs of its civil and military customers. Having CAE solutions in a single, integrated software environment in large parts of our business means that we can deploy the best-available computer-based design tools to our engineers for our defense-related engineering systems integration projects."

Patrick Lockley,
Director Engineering and Product Assurance,
BAE Systems Australia

Extended Enterprise and Engineering Knowledge Management

The defense supply chain has always been based on risk-sharing partnerships and full-system outsourcing. This close relationship between governments, armed forces and industry motivates the use of shared methods and tools. ANSYS provides solutions for capturing and managing engineering simulation processes and data. The open and adaptive architecture of the ANSYS Workbench platform enables easy data and process sharing, as well as efficient handling of legacy data and coupling to third-party simulation tools. With full interoperability with existing PLM systems, ANSYS® EKM™ provides advanced simulation process and data management capabilities such as automatic simulation metadata extraction, easy data mining tools or enterprise-wide simulation project management. These features allow for easy integration into the design process, ultimately leading to true Simulation Driven Product Development™.


Capabilities

- **Mechanical Solutions:** Static, modal, and harmonic; non-linear; explicit dynamics; SPH; buckling and fatigue; detonation models; composites; automated contact detection; CMS; thermal modeling; rigid and flexible multi-body dynamics; topological optimization

  Key Products: ANSYS® Mechanical™, ANSYS® Multiphysics™, ANSYS® AUTODYN®, ANSYS® LS-DYNA®

- **Fluids Solutions:** Steady and unsteady; transition; subsonic to hypersonic compressible flows; advanced turbulence modelling (LES/DES/SAS); moving, deforming and immersed geometries; FSI; species transport and reactions; heat transfer; multiphase

  Key Products: ANSYS® FLUENT®, ANSYS® CFX®

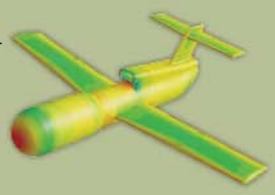
Capabilities (continued)

- **Electronics and Electromagnetics Solutions:** 3D/2D; magnetostatic and quasi-static eddy currents; full wave electromagnetic field; RCS; time- and frequency-domain; near- and far-field; antenna radiation patterns; EMI; ion optics; electrostatics; coupled HF electromagnetic/thermal analysis

  Key Products: ANSYS® Emag™, ANSYS Multiphysics

- **Preprocessing Solutions:** Bi-directional CAD connectivity; parametric modeling; surface-wrapping; geometry creation, repair and editing; structured, unstructured, blocked and multizone topologies; hex-dominant and cartesian meshing

  Key Products: ANSYS® Workbench™, TGrid™, ANSYS® DesignModeler™, ANSYS® ICEM CFD™



- **Enterprise Solutions:** Scalable simulation platform; engineering knowledge management; optimization; PLM connectivity; advanced automation and customization; comprehensive multiphysics; HPC; legacy data handling

  Key Products: ANSYS Workbench, ANSYS DesignXplorer, ANSYS® EKM™, ANSYS Multiphysics

NBC atmospheric dispersion • blasts & fragmentation • ballistics • missiles, ammunitions and ordnances • EM interference • liquid and solid propulsion • survivability • IR signature • silo launch & store separation • radar cross section • avionics • accident investigation & safety assessment • **defense**

About ANSYS, Inc.

ANSYS, Inc., founded in 1970, develops and globally markets engineering simulation software and technologies widely used by engineers and designers across a broad spectrum of industries. The Company focuses on the development of open and flexible solutions that enable users to analyze designs directly on the desktop, providing a common platform for fast, efficient and cost-effective product development, from design concept to final-stage testing, validation and production. The Company and its global network of channel partners provide sales, support and training for customers. Headquartered in Canonsburg, Pennsylvania, U.S.A., with more than 60 strategic sales locations throughout the world, ANSYS, Inc. and its subsidiaries employ approximately 1,700 people and distribute ANSYS products through a network of channel partners in over 40 countries.

Visit www.ansys.com for more information.

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