

ANSYS[®]

18

18.0 CAPABILITIES

- = Fully Supported
- ▲ = Limited Capability
- ☐ = Requires more than 1 product

	ANSYS Mechanical Enterprise	ANSYS Mechanical Premium	ANSYS Mechanical Pro	ANSYS DesignSpace	ANSYS Autodyn	ANSYS LS-DYNA	ANSYS AIM
STRUCTURES							
Geometric Idealization							
Spring	●	●	▲	▲	●	●	
Mass	●	●	●	●	●	●	
Damper	●	●			●	●	
Spar	●	●	●	●			
Beam	●	●	●	●	●	●	
Pipe/Elbow	●	●	●	●			
Shell - Thin	●	●	●	●	●	●	●
Layered Shell - Thin (Composite)	●	●			●	●	
Shell - Thick (Solid Shell)	●	●	●	●			
Layered Shell - Thick (Solid Shell) (Composite)	●	●					
2D Plane / Axisymmetric	●	●	●	●	●	●	
3D Solids	●	●	●	●	●	●	●
Layered 3D Solids (Composite)	●	●					
Infinite Domain	●	●	●		●	●	
2.5D	●	●					
Reinforced	●	●			●	●	
ROM	●						
Substructuring / Matrix	●						
Modeling Capabilities							
Contact - Linear	●	●	●	●	●	●	●
Contact - Nonlinear	●	●	●	▲	●	●	●
Joints	●	●	●			●	●
Spot Welds	●	●	●		●	●	
Birth and Death	●						
Gaskets	●						
Rezoning and Adaptive Remeshing	●				●	●	
Materials							
Basic Linear Materials (Linear, Anisotropic, Temperature Dependent).	●	●	●	●	●	●	●
Basic Nonlinear Materials (Hyper, Plasticity, Rate Independent, Isotropic, Concrete).	●	●			●	●	
Advanced Nonlinear Materials (Rate dependent, Anisotropic, Damage Models, Geomechanics Materials, Multiphysics).	●				●	●	
Field Dependent	●	●					
Reactive Materials	●				●		
Fracture Mechanics	●						

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Composite Materials							
Material Definitions	●	●			●	●	
Layers Definitions	●	▲			●	●	
Solid Extrusion	●						
First-ply Failure	●	●					
Last-Ply failure	●						
Delamination	●				●	●	
Draping	●						
Structural Solver Capabilities							
Linear Static	●	●	●	●			●
Nonlinear Static	●	●	●	▲			●
Pre-Stress effects, Linear perturbation	●	●	●	●	▲	▲	
Nonlinear Geometry	●	●	●		●	●	●
Buckling - Linear Eigenvalue	●	●	●	●			
Buckling - Nonlinear Post Buckling Behavior	●	●	●			●	●
Buckling - Nonlinear Post Buckling Behavior- Arc Length	●	●					
Steady State Analysis applied to a Transient Condition	●						
Advanced Wave Loading	●						
Topology Optimization							
Static Structural	●	●	●	●			
Modal Analysis	●	●	●	●			
Design Validation Transfer	●	●	●	●			
Manufacturing Constraints	●	●	●	●			
Multi Analysis							
Submodeling	●	●	●	●			
Data Mapping	●	●	●				●
Trace Mapping	●	●					
Initial State	●	●			●	●	
Advanced Multi-Stage 2-D to 3-D Analysis	●	●					
Vibrations							
Modal	●	●	●	●			●
Modal - Pre-Stressed	●	●	●	●			
Modal - Damped/Unsymmetric	●	●					
Transient - Mode-Superposition	●	●					

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Harmonic - Mode-Superposition	●	●					
Harmonic - Full	●	●					
Spectrum	●	●					
Random Vibration	●	●					
Mistuning	●	●					
Rotordynamics	●	●					
Nonlinear Transient Dynamics							
Rigid Body Mechanisms	●	●					
Rigid Body Dynamics with CMS components for flexible bodies	●						
Full Transient	●				●	●	
CMS with Substructuring	●						
Explicit Dynamics							
FE (Lagrange) Solver	●				●	●	
Euler Solvers	▲				●		
Meshless Solvers					●		
Implicit-Explicit Deformations	●				●	●	
Implicit-Explicit Material States	●				●		
Fluid-Structure Interaction (FSI)					●		
Mass Scaling	●				●	●	
Natural Fragmentation	●				●		
Erosion Based on Multiple Criteria	●				●	●	
De-Zoning					●	●	
Part Activation and Deactivation (Multi Stage Analysis)					●		
Remapping in Space					●		
Remapping Solution Methods					●		
Durability							
Stress-Life (SN)	●	●	●				●
Strain-Life (EN)	●	●	●				●
Dang Van	□ ¹	□ ¹	□ ¹				
Safety Factor	●	●	●				●
Adhesive Bond	□ ¹	□ ¹	□ ¹				
Crack Growth Linear Fracture Mechanics	▲ or □ ¹	□ ¹	□ ¹				
Seam Weld and Spot Weld	□ ¹	□ ¹	□ ¹				
Thermo-mechanical Fatigue	□ ¹	□ ¹	□ ¹				
Vibration Fatigue (Harmonic and PSD)	● or □ ¹	● or □ ¹					
Virtual Strain Gauge Correlation	□ ¹	□ ¹	□ ¹				
Python Scripting Customization	● or □ ¹	● or □ ¹	● or □ ¹				
Composite Fatigue	□ ¹	□ ¹	□ ¹				

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Wave Hydrodynamics							
Diffraction and Radiation	●						
Frequency & Time Domain Motions Analysis	●						
Moorings, Joints & Tethers	●						
Load Transfer to Structural Analysis	●						
Thermal							
Steady State Thermal	●	●	●	●			●
Transient Thermal	●	●	●				●
Conduction	●	●	●	●	●	●	●
Convection	●	●	●	●			●
Radiation to Space	●	●	●				●
Radiation - Surface to Surface	●	●	●				
Phase Change	●	●	●		●	●	
Thermal Analysis of Layered Shells and Solids	●	●					
Additional Physics							
1-D Thermal-flow	●	●	●				
1-D Coupled-field Circuits	●						
1-D Electromechanical transducer	●						
MEMS ROM	●						
Piezoelectric	●						
Piezoresistive	●						
Electroelastic	●						
Electromagnetic	●						▲
Vibro-acoustics	●						
Migration	●						
Diffusion -Pore-fluid	●						
Diffusion-Thermal Structural-Electric	●						
Structural-Thermal-Electric-Magnetic	●						▲
1-Way Fluid-Structure Interaction	□ ²	□ ²	□ ²				●
2-Way Fluid-Structure Interaction	□ ²						

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Optimization							
DesignXplorer Included	●	●	●	●	☐ ³	☐ ³	●
Parameters	●	●	●	●	●	●	●
Design Point Studies	●	●	●	●	●	●	●
Correlation Analysis	●	●	●	●			●
Design of Experiments	●	●	●	●			●
Sensitivity Analysis	●	●	●	●			●
Goal Driven Optimization	●	●	●	●			●
Six Sigma Analysis	●	●	●	●			●
Miscellaneous and Usability							
ANSYS SpaceClaim	●	☐ ⁴	☐ ⁴	☐ ⁴	☐ ⁴		●
ANSYS Customization Suite (ACS)	●	☐ ⁵	☐ ⁵	☐ ⁵	☐ ⁵		●
Support ACT Extensions	●	●	●	●	●	●	●
Command snippet support	●	●	●				●
Batch run capability	●	●	●	●	●	●	●
External Code Interfaces	●	●		●	●		●
HPC - Structures							
Default Number of Cores	2 (DMP + SMP) MAPDL 2 for Explicit 2 for RBD 2 for AQWA	2 (DMP + SMP)	2 (DMP + SMP)	2 (DMP + SMP)	1	1	2 (DMP + SMP) MAPDL
Parallel Solving on Local PC	●	●	●	●	●	●	●
Parallel Solving on Cluster	●	●	●		●	●	
GPU Support	☐ ⁶ MAPDL - Yes Explicit - No RBD - No Aqwa - No	☐ ⁶	☐ ⁶	☐ ⁶			

1 = ANSYS nCode DesignLife Products

2 = ANSYS Fluent

3 = ANSYS DesignXplorer

4 = ANSYS SpaceClaim

5 = ANSYS Customization Suite (ACS)

6 = ANSYS HPC, ANSYS HPC Pack or ANSYS HPC Workgroup

DMP = Distributed-memory

Parallel SMP = Shared-memory

Parallel MAPDL = Mechanical APDL

Explicit = Autodyn

RBD = Rigid Body Dynamics

Aqwa = Aqwa

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	ANSYS FLUENT	ANSYS CFX							
FLUIDS									
General Solver Capabilities									
Comprehensive Inlet and Outlet Conditions	●	●	●	●	●	●	●	●	
Steady-State Flow	●	●	●	●	●	●	●	●	●
Transient Flow	●	●	●	●	●	●	●		●
2-D and 3-D Flow	●	▲	●	▲	▲	▲	●	▲	
Time Dependent Boundary Conditions	●	●	●	●	●	●	●		●
Customizable Materials Library	●	●	●	●	●	●	●	●	●
Fan Model	●	●			●		●		
Periodic domains	●	●	●	●	●	●	●	●	
Dynamic/moving-deforming mesh	●	●	●	●	●		●		
Overset Mesh	●								
Immersed-solid/MST method for moving parts		●	●		●				
Flow-driven solid motion (6DOF)	●	●			●				
Pressure-based coupled solver	●	●	●	●	●	●	●	●	●
Density-based coupled solver	●								●
Automatic on-the-fly mesh generation with dynamic refinement	●			●					●
Dynamic Solution-Adaptive Mesh refinement	●	●		●	●	●	▲		●
Single Phase, non reacting flows									
Incompressible Flow	●	●	●		●	●		●	●
Compressible Flow	●	●		●	●		●	●	●
Porous Media	●	●	●		●			▲	●
Non-Newtonian Viscosity	●	●	●		●			●	
Turbulence - Isotropic	●	●		●	●	●	●	●	
Turbulence - Anisotropic (RSM)	●	●			●				
Turbulence - Unsteady (LES/SAS/DES)	●	●							
Turbulence - Laminar/Turbulent Transition	●	●					●	●	
Flow Pathlines (Massless)	●	●	●		●	●		●	
Fan Model	●	●			●		●		
Acoustics (Source Export)	●	●			●				
Acoustics (Noise Prediction)	●								
Heat Transfer									
Natural Convection	●	●			●			●	●
Conduction & Conjugate Heat Transfer	●	●			●	●	●	●	●
Internal Radiation - Participating Media	●	●	●		●				●
Internal Radiation - Transparent Media	●	●							●
External Radiation	●	●						●	●
Solar Radiation & Load	●	●							

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	ANSYS FLUENT	ANSYS CFX							
Particles Flows (Multiphase)									
Coupled Discrete Phase Modeling	●	●		●			●		●
Inert Particle Tracking (With Mass)	●	●							
Liquid Droplet (Incl. Evaporation)	●	●		●			●		
Combusting Particles	●	●		●					●
Multicomponent Droplets	●	●		●			●		
Discrete Element Model (DEM)	●								
Break-Up And Coalescence	●	●		●			●		
Free Surface Flows (Multiphase)									
Implicit And Explicit VOF	●	●	●		●				
Coupled Level Set/VOF	●	●			●				
Open Channel Flow And Wave	●	●							
Surface Tension	●	●		●	●				
Phase Change	●	●		●	●				
Cavitation	●	●		●	●				
Dispersed Multiphase Flows (Multiphase)									
Mixture Fraction	●	●							
Eulerian Model	●	●		●			●		
Boiling Model	●	●		●					
Surface Tension	●	●		●					
Phase Change	●	●		●			●		●
Drag And Lift	●	●		●			●		
Wall Lubrication	●	●		●					
Heat And Mass Transfer	●	●		●			●		●
Population Balance	●	●		●					●
Reactions Between Phases	●	●		●					●
Reacting Flows									
Species Transport	●	●	●	●	●				●
Non-Premixed Combustion	●	●		●					●
Premixed Combustion	●	●		●					●
Partially Premixed Combustion	●	●		●					●
Composition PDF Transport	●	●							
Finite Rate Chemistry	●	●	●	●					●
Pollutants And Soot Modeling	●	●		●					●
Sparse chemistry solver with dynamic cell clustering and dynamic adaptive chemistry	●			●					●
Ability to use Model Fuel Library mechanisms	●			●					●

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	ANSYS FLUENT	ANSYS CFX							
Flame-speed from Fuel-component Library				●					
DPIK Spark-ignition Model				●					
Flame-propagation using level-set method (G-equation)				●					
Internal Combustion Engine Specific Solution	●	●		●					●
0-D/1-D/2-D reactor models and reactor networks									●
Plasma reactions									●
Comprehensive surface-kinetics	●								●
Chemical and phase equilibrium	●								●
Flamelet table generation	●								●
Flamespeed and ignition table generation									●
Reaction sensitivity, uncertainty and path analysis									●
Surrogate blend optimizer									●
Mechanism Reduction									●
Turbomachinery									
MRF/Frozen-Rotor	●	●							
Sliding-Mesh/Stage	●	●							
Transient Blade Row		●							
Pitch Change		●							
Fourier Transformation		●							
Harmonic Analysis		●							
Blade Flutter Analysis		●							
Forced Response Analysis		●							

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	ANSYS FLUENT	ANSYS CFX							
In-Flight Icing									
Simulates Droplet Sizes							●		
Simulates Ice Growth and Performs Visibility Studies							●		
Models Heat Transfer Anti- and De-icing Heat Loads							●		
Rotating frame of reference for the analysis of turbomachines, rotors and propellers							●		
Model ice accretion at engine face (Fan and IGV) and within any number of successive compressor stages							▲		
Aerodynamic degradation (CFD) meets the requirements of Appendix C, Appendix D (Ice Crystals) and Appendix O (SLD)							●		
Shape Optimization									
Adjoint Solver for Sensitivity Analysis	●								
Mesh Morphing	▲								
High Rheology Material									
Viscoelasticity			●						
Specialty Extrusion Models			●						
Specialty Blow Molding Models			●						
Specialty Fiber Spinning Models	●								
HPC – Fluids									
Parallel Solving On Local PC Option	●	●	●	●	●	●	●	●	
Parallel Solving Over Network Option	●	●	●	●	●	●	●		
CPU Support	●	●	●	●	●	●	●	●	
GPU Support	●		●						

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	ANSYS FLUENT	ANSYS CFX							
MULTIPHYSICS									
Platform Technologies									
Advanced, Automated Data Exchange	●	●	●		●	●	●	●	
Accurate Data Interpolation Between Dissimilar Meshes	●	●			●	●	●	●	
Drag-n-Drop Multiphysics	●	●	●		●	●			
Direct Coupling Between Physics	●	●			●	●		●	
Collaborative Workflows	●	●			●	●		●	
Fully Managed Co-Simulation	●								
Flexible Solver Coupling Options	●	●			●	●	●		
Fluid-Structure Interaction									
Force Induced Motion/Deformation	●	●	●		●	●		●	
Fluid Thermal Deformation	●	●			●	●		●	
Electro-Thermal Interaction									
Convection Cooled Electronics	●								
Conduction Cooled Electronics	●								
High Frequency Thermal Management	●								
Electromechanical Thermal Management	●								
Other Coupled Interactions									
Aero-Acoustics	●								
Acoustics-Structural	●	●							
Fluid Magnetohydrodynamics	▲								

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	ANSYS Maxwell	ANSYS HFSS	ANSYS SIwave	ANSYS Q3D Extractor	ANSYS Icepak
ELECTRONICS					
Low Frequency Electromagnetics					
Electrostatics	●				
AC Conduction	●				
DC Conduction	●				
Magnetostatics	●				
Adaptive Field Mesh	●	●	●	●	
AC Harmonic Magnetic	●				
Electric Transient	●				
HPC Frequency Sweeps	●				
HPC Enabled Matrix Multiprocessing	●				
HPC Time Distribution Solver	●				
Magnetic Transient					
Translational Motion	●				
Fully Automatic Symmetrical Mesh Generation	●				
Layered Mesh Generation	●				
Rotational Motion	●				
Non-Cylindrical Motion	●				
Advanced Embedded Circuit Coupling	●				
Circuit Coupling with Adaptive Time Stepping	●				
Direct and Iterative Matrix Solvers	●				
Advanced Magnetic Modeling					
Vector Hysteresis Modeling	●				
Hysteresis Modeling for Anisotropic Material	●				
Nonlinear Reduced Order Models	●				
Frequency Dependent Reduced Order Models	●				
Equivalent Model Extraction (Linear-Motion, Rotational-Motion, No-Motion)	●				
Nonlinear Anisotropic Materials	●				
Functional Magnetization Direction	●				
Magnetization/De-magnetization Modeling	●				
Temperature De-magnetization Modeling	●				
Core Loss computation	●				
Lamination Modeling	●				
Magnetostriction and Magnetoelastic Modeling	●				

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Integrated Motor Synthesis and Design Kit	●				
Integrated Planar Magnetics Synthesis and Design Kit	●				
Integrated System and Circuit Simulation (Simplorer Entry)	●				
High Frequency Electromagnetics					
Multi-frequency broadband adaptive meshing		●			
Frequency and Time Domain Analysis		□			
Eigenmode Analysis		●			
Hybrid Finite Element/Integral Equation Analysis		●			
Hybrid Finite Element/Shooting and Bouncing Ray Analysis		□			
Modal Wave Port Excitation		●			
Lumped, Voltage and Current Excitations		●			
Floquet Excitations		●			
Incident Wave Excitation		●			
Magnetic Ferrite Bias Excitation		●			
Terminal Solutions		●			
Perfect Electric and Magnetic Boundary		●			
Finite Conductivity Boundaries		●			
Lumped RLC Boundary		●			
Symmetry Boundary		●			
Periodic Boundary		●			
Frequency dependant materials		●			
Higher and Mixed order Elements		●			
Curvilinear Elements		●			
Fully automated adaptive mesh refinement		●			
S,Y,Z Matrix Results		●			
E, H, J, P Field Results		●			
Direct and Iterative Matrix Solvers		●			
HPC Accelerated Frequency Sweeps		●			
HPC Enabled Matrix Multiprocessing		●			
HPC Distributed Hybrid Solving		●			
Antenna Parameter Calculation		●			
Infnite and Finite Antenna Array Calculations		□			
Radar Cross Section calculation		●			
FSS, EBG and Metamaterial Calculation		●			

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Specific Absorption Rate Calculation		●			
EMI/EMC Calculation		●			
System Level EMI and RFI analysis		●			
Linear Circuit Analysis with EM Dynamic link		●			
Integrated Antenna Synthesis and Design Kit		●			
Integrated Links to Delcross Savant Shooting and Bouncing Ray+ (SBR+) Solver		●			
Integrated Link to Delcross EMIT RFI/EMI System Solver		●			
Integrated Parametric 3D Component Libraries		●			
Power and Signal Integrity					
Board Simulation Capabilities					
Electronics Desktop 3D Layout GUI		●	●		
ECAD Translation (Altium, Cadence, Mentor, Pulsonix, & Zuken)		●	●		
MCAD (.sat) Generation from ECAD		●	●		
Lead Frame Editor		●	●		
DC Voltage, Current and Power Analysis for PKG/PCB			●		
DC Joule Heating with ANSYS Icepak			●	●	●
Passive Excitation Plane Resonance Analysis			●		
Driven Excitation Plane Resonance Analysis			●		
Automated Decoupling Analysis			●		
Capacitor Loop Inductance Analysis			●		
AC SYZ Analysis - PI, SI, & EMI		●	●		
Dynamically Linked Electromagnetic Field Solvers		●	●		
Chip, Package, PCB Analysis (CPM)		●	●		
HPC SYZ Speed Up		●	●		
Near-Field EMI Analysis			●		
Far-Field EMI Analysis			●		
Characteristic Impedance (Zo)			●		
PKG/PCB Scan			●		
Full PCB/PKG Cross-talk Scanning			●		
TDR Analysis		●	●		

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Transient IBIS Circuit Analysis			●		
SerDes IBIS-AMI Circuit Analysis					●
Macro-Modeling (Network Data Explorer)		●	●		
Steady State AC (LNA) Analysis		●	●		
Virtual Compliance - DDRx, GDDRx, & LPDDRx			●		
Synopsys HSPICE Integration			●		
Cadence PSPICE Support			●		
Electromagnetically Circuit Driven Field Solvers		●	●		
RLCG Parasitic Extraction					
DCRL, ACRL & CG Solver			●	●	
IC Packaging RLCG IBIS Extraction for Signals & Power			●	●	
Touchpanel RLCG Unit Cell Extraction			●	●	
Adaptive Meshing for Accurate Extraction				●	
Bus Bar RLCG Extraction				●	
Power Inverter & Converter Component Extraction				●	
Specialized Thin Plane Solver for Touchpanel Extraction				●	
HPC Acceleration for DCRL, ACRL, and CG				●	
3D Component Library		●		●	
Reduced RLCG Matrix Operations				●	
SPICE equivalent Modeling Export				●	
DCRL & ACRL Joule Heating Analysis with Icepak				●	
Macro-modeling (Network Data Explorer)				●	
2D Transmission Line Modeling Toolkit				●	
2D Cable Modeling Toolkit				●	

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Electronics Cooling					
Multi-mode Heat Transfer					●
Steady-state and Transient					●
CFD Analysis					●
Turbulent Heat Transfer					●
Multiple-fluid Analysis					●
Species Transport					●
Solar Loading					●
Reduced Order Flow and Thermal					●
Network Modeling					●
Joule Heating Analysis	●	●	●	●	●
Thermo-electric Cooler Modeling					●
Thermostat Modeling					●
Package Characterization					●
Data Center Modeling					●
Multiphysics					
Platform Technologies					
Advanced, Automated Data Exchange	●	●			
Accurate Data Interpolation Between	●	●			
Dissimilar Meshes	●	●			
Drag-n-Drop Multiphysics	●	●			
Direct Coupling Between Physics	●	●			
Collaborative Workflows	●	●			
Fully Managed Co-Simulation	●	●			
Flexible Solver Coupling Options	●	●			
Electro-Thermal Interaction					
Convection Cooled Electronics		●			●
Conduction Cooled Electronics		●			●
High Frequency Thermal Management		●			
Electromechanical Thermal Management	●				

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	ANSYS Simplorer	ANSYS SCADE Architect	ANSYS SCADE Suite	ANSYS SCADE Display
SYSTEMS & EMBEDDED SOFTWARE				
Virtual Systems Prototyping				
Integrated Graphical Modeling Environment	●		▲	
Standard Modeling Languages and Exchange Formats	●		▲	
Extensive Model Libraries	●		▲	
Reduced Order Modeling (ROM)	●		▲	
Power Electronic Device And Module Characterization	●		▲	
Model Import Interfaces	●		▲	
Rapid Prototyping	●		▲	
Modelica Library Integration	●		▲	
Model-based Systems Engineering				
Model-Based System Design		●		
Functional Decomposition		●		
Architecture Decomposition		●		
Allocation Of Functions To Components		●		
Model Checks		●		
System Model Diff/Merge		●		
System / Software Bi-Directional Sync		●		
Model Sharing And IP Protection		●		
Model-Based Interface Control Document Production		●		
Configurable For Industry Standards (IMA, AUTOSAR, Etc.)		●		
Product configuration for automotive developers		●		
Embedded Control Software Development				
Data Flow And State Machine Design And Simulation Capabilities			●	
Extensive Set Of Libraries Delivered As Design Examples			●	
Simulation Capabilities			●	
Record And Playback Scenarios			●	
Integration In To Configuration Management Environment			●	
Plant Model Co-Simulation Including FMI			●	
Coverage Analysis For Requirements-Based Tests			●	

- = Fully Supported
- ▲ = Limited Capability
- ☐ = Requires more than 1 product

	ANSYS SImplorer	ANSYS SCADE Architect	ANSYS SCADE Suite	ANSYS SCADE Display
Formal Verification			●	
Timing And Stack Optimization			●	
Worst Case Execution Time Estimates On Target			●	
Verification Of Stack Space Requirements			●	
Certified Code Generation For DO-178C, EN 50128, ISO 26262, IEC 61508			●	
Certification Kits For DO-178C, EN50128, ISO 26262, IEC 61508			●	
Man-Machine Interface Software				
Model-Based Prototyping And Specification Of MMIs				●
Support Of OpenGL, OpenGL SC and OpenGL ES				●
Integration In To Configuration Management Environment				●
Font Management				●
Optimization Of Graphical Specifications				●
Plant Model Co-Simulation Including FMI				●
Automatic Generation Of iOS and Android Projects				●
Certified Code Generation For DO-178C, EN 50128, ISO 26262, IEC 61508				●
Certification Kits For DO-178C, EN50128, ISO 26262, IEC 61508				●
Testing capabilities				●

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	ANSYS AIM	ANSYS Enterprise	ANSYS Design Modeler	ANSYS SpaceClaim Direct Modeler
GEOMETRY				
Model Prep for CAE				●
Open data from any CAD system	●	●	●	●
Edit designs and prepare them for simulation	●	●	●	●
Simplify geometry by removing features (eg rounds and holes)	●	●	●	●
Clean up and repair dirty geometry to create watertight solids	●	●	●	●
Create parameters on imported geometry to enable optimization of designs through analysis	●	●	●	●
Extract mid-surfaces/shells and beams solid models for efficient meshing and solving	●	●	●	●
Extract volumes/create inner fluid domains and outer air enclosures for CFD	●	●	●	●
Create shared topology among bodies to generate conformal meshes	●	●	●	●
Slicing of models into hex meshable bodies	●	●	●	●
Create weld bodies to simulate welds between shells	●	●	●	●
Define regions of symmetry for symmetric analysis			●	
Define named selections to aid in scoping of loads and boundary conditions	●	●	●	●
Define general CAD attributes			●	●
2D drawing and editing tools	●	●	●	●
2D dimensioning and constraints			●	▲
Supply 3D markups and compare models to document changes to design teams	●	●		●
Repair and edit faceted files for further FEA topological optimization and CFD analysis	●	●		●
Early Concept Design (bid modeling/ brainstorming/concepting)				
Create new concepts quickly and easily with four tools: Pull, Move, Fill, Combine	●	●		●

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	ANSYS AIM	ANSYS Enterprise	ANSYS Design Modeler	ANSYS SpaceClaim Direct Modeler
Use Cut, Copy, Paste, etc for fast ideation from existing designs	●	●		●
Enable 2d and 3D communication and collaboration with 3D Markup, Dimensions, and Drawing tools	●	●		●
Create BOM to evaluate weights and lengths for cost calculations	●	●		●
Make real-time edits with customers in LiveReview	●	●		●
Use automated tools to repair dirty geometry	●	●	●	●
Use top down or bottom up modeling	●	●	●	●
Create 2D drawings	●	●		●
Import and edit large assemblies	●	●		●



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