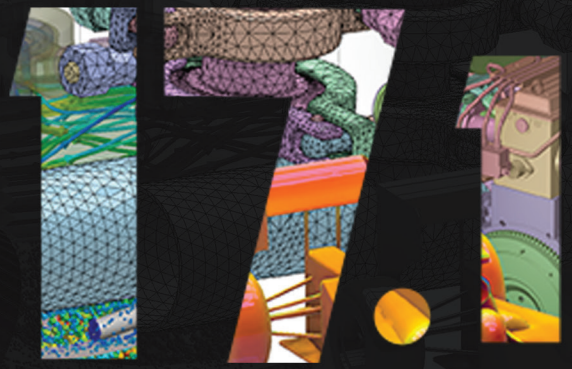
ANSYS®



ANSYS 17.1 Capabilities

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● = 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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	ANSYS Mechanical Enterprise	ANSYS Mechanical Premium	ANSYS Mechanical Pro	ANSYS DesignSpace	ANSYS Autodyn	ANSYS LS-DYNA	ANSYS AIM
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	●						
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	●	●					
Harmonic - Mode-Superposition	●	●					
Harmonic - Full	●	●					
Spectrum	●	●					
Random Vibration	●	●					
Mistuning	●	●					
Rotordynamics	●	●					

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	ANSYS Mechanical Enterprise	ANSYS Mechanical Premium	ANSYS Mechanical Pro	ANSYS DesignSpace	ANSYS Autodyn	ANSYS LS-DYNA	ANSYS AIM
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	□[1]	□[1]	□[1]				
Seam Weld	□[1]	□[1]	□[1]				
Spot Weld	□[1]	□[1]	□[1]				
Thermo-mechanical Fatigue	□[1]	□[1]	□[1]				
Vibration Fatigue	□[1]	□[1]	□[1]				
Virtual Strain Gauge Correlation	□[1]	□[1]	□[1]				
Python Scripting Customization	□[1]	□[1]	□[1]				
Wave Hydrodynamics							
Diffraction and Radiation	●						
Frequency & Time Domain Motions Analysis	●						
Moorings, Joints & Tethers	●						
Load Transfer to Structural Analysis	●						

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	ANSYS Mechanical Enterprise	ANSYS Mechanical Premium	ANSYS Mechanical Pro	ANSYS DesignSpace	ANSYS Autodyn	ANSYS LS-DYNA	ANSYS AIM
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-Way Fluid-Structure Interaction	□[2]						
Optimization							
DesignXplorer Included	●	□[3]	□[3]	□[3]	□[3]	□[3]	●
Parameters	●	●	●	●	●	●	●
Design Point Studies	●	●	●	●	●	●	●
Correlation Analysis	●	□[3]	□[3]	□[3]			●
Design of Experiments	●	□[3]	□[3]	□[3]			●
Sensitivity Analysis	●	□[3]	□[3]	□[3]			●
Goal Driven Optimization	●	□[3]	□[3]	□[3]			●
Six Sigma Analysis	●	□[3]	□[3]	□[3]			●
Topological Optimization	▲	▲	▲	▲			

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	ANSYS Mechanical Enterprise	ANSYS Mechanical Premium	ANSYS Mechanical Pro	ANSYS DesignSpace	ANSYS Autodyn	ANSYS LS-DYNA	ANSYS AIM
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 1 for Explicit 1 for RBD 1 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]			
Systems							
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	●						

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 CFD								
	ANSYS FLUENT	ANSYS CFX	ANSYS POLYFLOW	ANSYS Forte	ANSYS CFD FLO	ANSYS CFD Professional	ANSYS FENSAP-ICE	ANSYS Chemkin	ANSYS AIM
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 CFD				ANSYS CFD FLO	ANSYS CFD Professional	ANSYS FENSAP-ICE	ANSYS Chemkin	ANSYS AIM
	ANSYS FLUENT	ANSYS CFX	ANSYS POLYFLOW	ANSYS Forte					
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	ANSYS POLYFLOW	ANSYS Forte	ANSYS CFD FLO	ANSYS CFD Professional	ANSYS FENSAP-ICE	ANSYS Chemkin	ANSYS AIM
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		●							
Blade Flutter Analysis		●							
Forced Response Analysis		●							
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)							●		

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	ANSYS FLUENT	ANSYS CFX	ANSYS POLYFLOW	ANSYS Forte	ANSYS CFD FLO	ANSYS CFD Professional	ANSYS FENSAP-ICE	ANSYS Chemkin	ANSYS AIM
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	●		●						
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	●	●			●	●			●
Fluid Thermal Deformation	●	●			●	●			●
Electro-Thermal Interaction									
Convection Cooled Electronics	●								
Conduction Cooled Electronics	●								
High Frequency Thermal Management	●								
Electromechanical Thermal Management	●								
Additional Physics									
Aero-Acoustics	●								
Acoustics-Structural	●	●							
Fluid Magnetohydrodynamics	▲								
Electromagnetics									▲

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	ANSYS Maxwell	ANSYS HFSS	ANSYS SIwave-DC	ANSYS SIwave-PI	ANSYS SIwave	ANSYS Q3D Extractor	ANSYS Icepak
ELECTRONICS							
Low Frequency Electromagnetics							
Electrostatics	●						
AC Conduction	●						
DC Conduction	●						
Magnetostatics	●						
Adaptive Field Mesh	●						
AC Harmonic Magnetic	●						
AC Harmonic Electric							
Electric Transient	●						
Ion Optics							
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	●						
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	●						
High Frequency Electromagnetics							
Fully automated adaptive mesh refinement		●					

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	ANSYS Maxwell	ANSYS HFSS	ANSYS SIwave-DC	ANSYS SIwave-PI	ANSYS SIwave	ANSYS Q3D Extractor	ANSYS Icepak
Frequency and Time Domain Analysis		●					
Eigenmode Analysis		●					
3D Integral equation/Method of Moments (MoM) Field Solver		□					
Hybrid Finite Element/Integral Equation Analysis		□					
3D Physical Optics (PO) Asymptotic Solver		□					
3D Shooting Bouncing Ray (SBR) Asymptotic Solver		□					
Advanced SBR models; UTD, GTD, PO/PTD and Creeping Waves		□					
Modal Wave Port Excitation		●					
Lumped, Voltage and Current Excitations		●					
Floquet Excitations		●					
Incident Wave Excitation		●					
Magnetic Ferrite Bias Excitation		▲□					
Terminal Wave Port Excitations		●					
Direct and Iterative Matrix Solvers		●					
Higher and Mixed order Elements		●					
Curvilinear Elements		●					
Perfect Electric and Magnetic Boundary		●					
Finite Conductivity Boundaries		●					
Lumped RLC Boundary		●					
E and H Field Symmetry Boundaries		●					
Periodic Boundary		●					
Frequency dependant materials		●					
S,Y,Z Matrix Results		●					
E, H, J, P Field Results		●					
Optimization		□					
HPC Enabled Matrix Multiprocessing		□					
HPC Enabled Frequency Sweeps		□					
HPC Enabled Domain Decomposition Method (DDM)		□					
HPC Enabled Finite Antenna Array DDM		□					
HPC Enabled Distributed Hybrid Solving		□					
HPC Enabled Multi-level Distribution		□					
DSO Enabled Distributed Parametric and Optimization Analysis		□					
Antenna Synthesis with ACT Extension		●					

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	ANSYS Maxwell	ANSYS HFSS	ANSYS SIwave-DC	ANSYS SIwave-PI	ANSYS SIwave	ANSYS Q3D Extractor	ANSYS Icepak
Antenna Parameter Calculation		●					
Infinite and Finite Antenna Array Calculations		▲□					
Radar Cross Section calculation		●					
FSS, EBG and Metamaterial Calculation		●					
Specific Absorption Rate Calculation		●					
EMI/EMC Calculation		●					
System Level EMI and RFI analysis		□					
Cable Modeling		□					
Basic Human Body Models		●					
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		●			●		
Transient IBIS Circuit Analysis					●		
SerDes IBIS-AMI Circuit Analysis					●		
Macro-Modeling (Network Data Explorer)		●	●	●	●		
Steady State AC (LNA) Analysis		●			●		
Virtual Compliance - DDRx, GDDRx, & LPDDRx					●		

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	ANSYS Maxwell	ANSYS HFSS	ANSYS SIwave-DC	ANSYS SIwave-PI	ANSYS SIwave	ANSYS Q3D Extractor	ANSYS Icepak
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						●	
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							●

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	ANSYS Maxwell	ANSYS HFSS	ANSYS SIwave-DC	ANSYS SIwave-PI	ANSYS SIwave	ANSYS Q3D Extractor	ANSYS Icepak
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	□						
Systems							
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	●					●	

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	ANSYS PowerArtist	ANSYS Pathfinder	ANSYS Totem	ANSYS Redhawk	ANSYS SeaHawk
SEMICONDUCTOR					
Integrated Circuit Reliability					
Static and Dynamic Power EM (Electromigration) Analysis			●	●	
Signal EM Analysis for Average, RMS and Peak			●	●	
Foundry Certified EM Rules Support for Advanced Nodes			●	●	
Temperature-Dependent EM Analysis			●	●	
CTM and Package Aware Thermal Analysis			●	●	
Self-Heat Calculation for FinFET Nodes			●	●	
Transistor-level Dynamic Signal EM Analysis			●		
Transistor-level Vectorless Signal EM Analysis			●		
Transistor-level Dynamic Power EM Analysis			●		
Layout Based ESD Analysis		●			
Bump to Bump, Bump to Clamp, Clamp to Clamp Connectivity Check		●			
Bump to Bump, Bump to Clamp, Clamp to Clamp Resistance Check		●			
HBM/MM/CDM ESD Analysis		●			
Resistance and Current Density Based ESD Analysis		●			
Guard Ring Weakness Checking		●			
IC Power Efficiency					
RTL Inference Based Power Analysis	●				
Simulation Based (FSDB, VCD, SAIF) and Vectorless Power Analysis	●				
Physically Aware RTL Clock Tree and Wire Capacitance Modeling	●				
Power Hotspot Identification by Logical Hierarchy, Design and Power Category	●				
Average and Time Based Power Analysis	●				
UPF / CPF Based What-If RTL Power Exploration of Power Domains	●				
PACE Model Generation	●				
Cross Probing Between Power Annotated Schematics, Waveforms and HDL	●				
Sequential and Combinatorial Power Reduction Algorithms	●				
Block-level Data and Clock Gating Opportunity Identification	●				
15 Clock, Memory and Logic Power Reduction Techniques	●				

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	ANSYS PowerArtist	ANSYS Pathfinder	ANSYS Totem	ANSYS Redhawk	ANSYS SeaHawk
Power Reduction Opportunity Identification for Clock, Memory and Logic	●				
Peak and di/dt Cycle Selection from FSDB	●				
RTL Power Driven Early Chip and Package Power Grid Planning	●				
Standard Power Metrics Reporting	●				
Tcl Based UI to OADB Power Database for Custom Reports	●				
On/Off State Power Leakage Analysis			●	●	
Voltage Island Ramp-up / Ramp-down Analysis				●	
In-Rush Current Analysis				●	
Driver / Receiver Hot-Pair Analysis				●	
Mixed-Mode Ramp-up and On-State Analysis				●	
Power Gate/Switch Id-Sat Check				●	
Driver/Receiver Differential Voltage Check				●	
Power Gate Optimization				●	
Power Gate Delay Optimization				●	
Mixed-Mode VCD and Vectorless Power Analysis			●	●	
Low Power IP/Block Analysis				●	
Power Gated IP Analysis				●	
Automatic Switch Identification and Characterization			●		
Switched RAM Analysis			●		
LDO / Voltage Regulator Based Low Power Analysis			●	●	
In-design statis and dynamic IR drop analysis					●
In-design electromigration analysis					●
Fast turnaround for early design robustness checks					●
Elastic compute for high scalability and support of massive designs on commodity servers					●
Flexible big-data analytics for multi-domain information					●
Scenario analysis and assistance for scenario design					●
Power delivery network optimization					●

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	ANSYS Simplorer	ANSYS SCADE System	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 avionics 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			●	

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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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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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If you've ever seen a rocket launch, flown on an airplane, driven a car, used a computer, touched a mobile device, crossed a bridge or put on wearable technology, chances are you've used a product where ANSYS software played a critical role in its creation. ANSYS is the global leader in engineering simulation. We help the world's most innovative companies deliver radically better products to their customers. By offering the best and broadest portfolio of engineering simulation software, we help them solve the most complex design challenges and engineer products limited only by imagination. Visit www.ansys.com for more information.

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