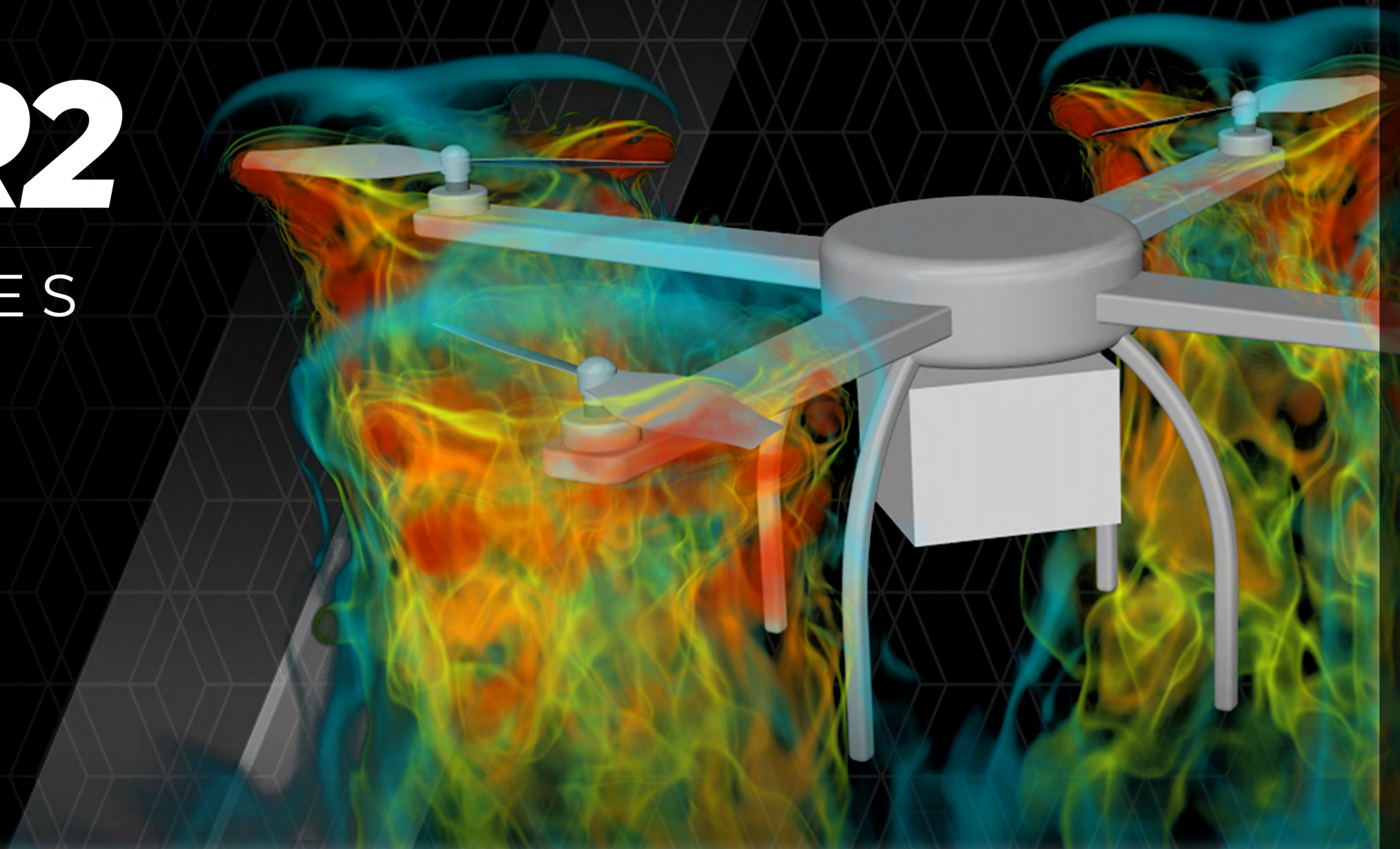


Ansys
2024/R2
CAPABILITIES



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/ STRUCTURES	MECHANICAL ENTERPRISE	MECHANICAL PREMIUM	MECHANICAL PRO	AUTODYN	LS-DYNA	SHERLOCK	MOTION	FORMING PRO
VIBRATIONS								
Modal	●	●	●		●	●	●	
Modal - Pre-Stressed	●	●	●		●		●	
Modal – Damped/Unsymmetric	●	●						
Transient - Mode-Superposition	●	●			●	●	●	
Harmonic - Mode-Superposition	●	●			●	●		
Harmonic - Full	●	●			▲			
Nonlinear Harmonic – Full	●							
Spectrum	●	●			●			
Random Vibration	●	●			●	●		
Mistuning	●	●						
Multi-Stage Cyclic Symmetry	●							
Rotordynamics	●	●			●			
ACOUSTICS								
Modal Acoustics	●							
Harmonic Acoustics	●				●			
Transient Acoustics	●				●			
Boundary Element Method Acoustics	●				●			
Spectral Element Method Acoustics					●			
Statistical Energy Analysis Acoustics	●				●			
Piezoelectric Acoustics	●							
Generation of Acoustic Signature from Contact Regions	●				●		●	
Acoustics Element Library	●	●			●		●	
Acoustics Material Models	●	●			●			

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WAVE HYDRODYNAMICS								
Diffraction and Radiation	●							
Frequency & Time Domain Motions Analysis	●							
Moorings, Joints & Tethers	●							
Internal Tanks	●							
Load Transfer to Structural Analysis	●							
ADDITIONAL PHYSICS								
1-D Thermal-Flow	●	●	●		●			
1-D Coupled-Field Circuits	●							
1-D Electromechanical Transducer	●							
Piezoelectric	●				●			
Piezoresistive	●							
Electromagnetic	●							
Electro-Migration	●					●		
Diffusion-Pore-Fluid	●							
Diffusion-Thermal-Electric-Magnetic	●							
1-Way Fluid Structure Interaction	■ ²	■ ²	■ ²					
2-Way Fluid-Structure Interaction	■ ²	■ ²	■ ²	●	●			
Incompressible Fluid Dynamics (ICFD)					●			
Arbitrary Lagrangian Eulerian Method (ALE)					●			
Electromagnetics (EM) - Boundary Element Method (BEM)					●			
Multi-scale Modeling	●				●			
Conservation Element/Solution Element (CESE)					●			

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COMPOSITE MATERIALS								
Material Definitions	●	●		●	●	●	●	
Ply Definitions	●	▲		●	●	●		
Interface Layers	●				●			
Advanced Ply-Modeling Features	●							
Variable Material Data	●				▲			
Solid Extrusion	●				●			
Lay-Up Mapping	●				■ ¹⁴			
Draping	●				●			
Lay-Up Exchange Interfaces	●							
Advanced Failure Criteria Library	●				▲			
First-Ply Failure	●	●			●			
Last-Ply failure	●				●			
Delamination	●				●			
Composite Cure Simulation	■ ⁹				▲			
Sandwich Modeling	●				●			
Automation / Run Scripts	●				●			
Short Fiber Composites	●				●			

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DURABILITY								
Stress-Life (SN)	●	●	●		●		●	
Strain-Life (EN)	●	●	●		●		●	
Dang Van	■ ¹	■ ¹	■ ¹		■ ¹			
Safety Factor	●	●	●		●		●	
Adhesive Bond	■ ¹	■ ¹	■ ¹		■ ¹			
Crack Growth Linear Fracture Mechanics	■ ¹	■ ¹	■ ¹		■ ¹			
Seam Weld	■ ¹	■ ¹	■ ¹		■ ¹			
Spot Weld	■ ¹	■ ¹	■ ¹		■ ¹			
Thermo-Mechanical Fatigue	■ ¹	■ ¹	■ ¹		■ ¹	▲		
Vibration Fatigue	■ ¹	■ ¹	■ ¹		■ ¹	●	●	
Short-Fiber Composite Fatigue	■ ¹							
Virtual Strain Gauge Correlation	■ ¹	■ ¹	■ ¹		■ ¹			
Python Scripting Customization	■ ¹	■ ¹	■ ¹		■ ¹	▲		
ELECTRONICS RELIABILITY								
Time-to-Failure (TTF)						●		
Parts Database (geometry, materials)						●		
Laminate Materials (linear, anisotropic)						●		
Solder Database						●		
EXPLICIT DYNAMICS								
FE (Lagrange) Solver	●			●	●			
Euler Solvers				●	●			
Implicit-Explicit Material States	●			●	●			
Mass Scaling	●			●	●			
Natural Fragmentation	●			●	●			
Erosion Based on Multiple Criteria	●			●	●			
De-Zoning				●	●			
Part Activation and Deactivation (Multi Stage Analysis)				●	●			
Explicit Time Integration	●			●	●			

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IMPLICIT DYNAMICS								
Implicit Time Integration	●	●			●	●	●	
GEOMETRIC IDEALIZATION								
Spring	●	●	▲	●	●		●	
Mass	●	●	●	●	●		●	
Damper	●	●		●	●		●	
Spar	●	●	●		●			
Beam	●	●	●	●	●		●	
Cable	●	●	●		●			
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 Elements	●	●						
Reinforcement Elements	●	●		●	●	■		
Coupled Field ROM Element Technology	●	●						
Iso-Geometric Analysis (IGA)					●			
GEOMETRY AND STL FILE HANDLING								
SpaceClaim Direct Modeler	●							

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HPC - STRUCTURES								
Default Number of Cores	4 cores (DMP or SMP) MAPDL, 4 for Explicit, 4 for RBD, 4 for AQWA	4 cores (DMP or SMP) MAPDL, 4 for RBD	4 cores (DMP or SMP)	4 cores	1 core	Default Number of cores based on machine being used	1 core	4 cores
Parallel Solving on Local PC and Cluster	●	●	●	●	●	●	●	▲
MAPDL GPU Offload Acceleration	■ ⁶	■ ⁶	■ ⁶					
Ansys Cloud Support	MAPDL - Yes Explicit - No RBD - No AQWA - No	MAPDL - Yes RBD - No	MAPDL - Yes		●	▲		
Hybrid Parallel	●	●	●					
MATERIALS								
Basic Linear Materials (Linear, Anisotropic, Temperature Dependent)	●	●	●	●	●	●	●	
Basic Nonlinear Materials (Hyperelastic, Plasticity, Rate Independent, Isotropic, Concrete, Viscoelasticity)	●	●	▲	●	●		●	
Advanced Nonlinear Materials (Rate dependent, Anisotropic, Damage Models, Geomaterials, Multiphysics, Acoustics)	●			●	●			
Specialty Materials (Glass, Foam, Kevlar, Fabric, Biomechanic, Paper, Cardboard)					●		●	
Field Dependent	●	●		●				
Reactive Materials (Equations of State, High Explosives, Propellants)				●	●			
User Defined Material Model Formulations	●			●	●		●	
Fracture Mechanics and Crack Growth	●				▲			
Materials Multiscale Homogenization	●				●			
Materials Database	■ ⁷	■ ⁷	■ ⁷	■ ⁷	■ ⁷	●	■ ⁷	

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MISCELLANEOUS AND USABILITY								
Ansys SpaceClaim	●	■ ⁴	■ ⁴	■ ⁴	■ ⁴		■ ⁴	
Ansys Customization Suite (ACS)	●							
Support ACT Extensions	●	●	●	●	●			
Journaling and Scripting	●	●	●		●	●	▲	
Command Snippet Support	●	●	●					
Batch run capability	●	●	●	●	●	●	●	
Read/Write 3rd Party Matrix CAE Data	●	●		●	●		●	
CDB and 3rd party FE Model Import	●	●	●		●		●	
Nastran Bulk File Export	●	●	●			●		
Direct Input of Nastran Bulk Data Files					●			
Pre-stressing from Nastran Linear Solution					●			
Global/Selective Mass Scaling	●			●	●			
Keyword Input	●	●	●		●			
Splitting of Input File into Subfiles	●	●	●		●			
User Subroutines	●			●	●		●	
Re-mapping	●			●	●			
Transmitting boundaries	●			●	●			
Dynamic Storage Allocation	●	●	●		●			
Extensive Output Data Controls (ascii/binary)	●	●	●		●			
Sense Switch Controls - Monitor Simulations Status	▲	▲	▲		●			
Interactive Real-Time Graphics	●	●	●	●	●			
Double Precision	●	●	●	●	●		●	

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MODELING CAPABILITIES										
Contact - Linear	●	●	●	●	●		●			
Contact - Nonlinear	●	●	●	●	●		●			
Joints	●	●	●	●	●		●			
Seam Welds	●	●	●	●	●		●			
Spot Welds	●	●	●	●	●		●			
Element Birth and Death	●	●			●		●			
Gasket Elements	●				●					
Rezoning and Adaptive Remeshing	●				●					
Inverse Analysis	●									
MULTI ANALYSIS										
Submodeling	●	●	●		●	▲				
Data Mapping	●	●	●		●		●			
Multiphysics Data Mapping	●	●	▲			▲	●			
Initial State	●	●		●	●		●			
Advanced Multi-Stage 2-D to 3-D Analysis	●	●								
NONLINEAR MULTI-BODY DYNAMICS										
Rigid Body Mechanisms	●	●			●		●			
Rigid Body Dynamics with CMS Components for Flexible Bodies	●						●			
Full Transient	●	●		●	●		●			
CMS with Substructuring	●						●			
Mixed Rigid - Flexible Systems	●	●	●	●	●		●			
Function Expression					●		●			
Drivetrain Creation							●			
Links							●			
Vehicle Dynamics					●		●			

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OPTIMIZATION								
DesignXplorer included	●	●	●	■ ³	■ ³			
Parameters	●	●	●	●	●	▲	●	
Design Point Studies	●	●	●	●	●		●	
Correlation Analysis	●	●	●	●				
Design of Experiments	●	●	●	●			●	
Sensitivity Analysis	●	●	●	●				
Goal Drive Optimization	●	●	●	●				
STRUCTURAL SOLVER CAPABILITIES								
Linear Static	●	●	●		●	●	●	
Nonlinear Static	●	●	●		●		●	
Pre-Stress Effect, 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	●							
THERMAL								
Steady State Thermal	●	●	●		●	▲		
Transient Thermal	●	●	●		●		●	
Conduction	●	●	●	●	●	●	●	
Convection	●	●	●		●			
Radiation to Space	●	●	●		●			
Radiation - Surface to Surface	●	●	●		●			
Phase Change	●	●	●	●	●			
Thermal Analysis of Layered Shells and Solids	●	●	●		●			

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/ STRUCTURES	MECHANICAL ENTERPRISE	MECHANICAL PREMIUM	MECHANICAL PRO	AUTODYN	LS-DYNA	SHERLOCK	MOTION	FORMING PRO
TOPOLOGY AND LATTICE OPTIMIZATION								
Structural Optimization	●	●	●					
Modal Optimization	●	●	●					
Thermal Loads	●	●	●					
Inertial Loads	●	●	●					
Optimized Design Validation	●	●	●					
Manufacturing Constraints	●	●	●					
Stress Constraints	●	●	●					
Symmetry	●	●	●					
Lattice Optimization	●	●	●					
Overhang/Additive Constraints	●	●	●					
PARTICLE METHODS								
Smooth Particle Hydrodynamics (SPH)				●	●			
Smooth Particle Galerkin (SPG)					●			
Corpuscular Particle Method (CPM)					●			
Discrete Element Method (DEM)					●			
AUTOMOTIVE								
Seat-belts - including modeling of accelerometer, pretensioner, retractor, sensor, and slip ring					●			
Inflator Models					●			
Airbag Fabric Constitutive Models					●			
Accelerometers					●			
Airbag Sensors					●			
Airbag Breakout					●			
Eulerian Deployment of Airbags					●			
Airbag Folder					●			
Unfolded Reference Geometry for Airbags					●			

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AUTOMOTIVE								
Dummy Positioner					●			
Side-Impact Dummy Special Damper					●			
Airbag Deployment					●			
METAL STAMPING								
Multi-Stage Forming Process Validation								●
Material Data Library and Management								●
Process Definition								●
Tool Setup and Preview								●
Drawbead Definition								●
Multiple Lancing Operation								●
Stamping Specific Post Processing (FLD, Formability Index, Wrinkling, Skidmark)								●
Clamping Simulation								●
Trim Line Development								●
Blank Line Development								●
Mesh Check								●
Automatic or Manual Mesh Repair								●

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/ ACOUSTICS SIMULATION	ANSYS SOUND ENTERPRISE	ANSYS SOUND PREMIUM	ANSYS SOUND PRO
ACOUSTICS & SOUND QUALITY			
Listen and Modify Sound (SAS)	●	●	●
Perform Acoustic Analysis and Psychoacoustic Criteria Calculations (SAS)	●	●	●
Automatic Sound Component Detection and Separation (SAS)	●	●	●
Connect and Listen to Ansys Mechanical, LS-DYNA, Fluent, Motor-CAD, and Motion CAE Simuations	●	●	●
3D Sound for Listening Room and VR (VR Sound)	●	●	
Interactive Sound for Driving Simulator (Car Sound Simulator)	●	●	
Measure Sound Perception with Listening Test (Jury Listening Test)	●	●	
Engine Sound Design and Engine Sound Enhancement for ICE Vehicle (ASD)	●		
Active Sound Design for Electric Vehicles (ASD for EV)	●		
Combine Test and Simulation Data to Assess Sound Quality	●	●	●
Python Library for Sound Processing and Sound Quality	●	●	●

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/ ADDITIVE MANUFACTURING	ADDITIVE PRINT	ADDITIVE SUITE							
ADDITIVE PREP									
Define Build Envelope	■	■							
Multiple Parts	■	■							
Optimize Part Orientation Based upon Distortion Tendency, Build Time and Supports	■	■							
Support Region Detection and Manual Modification	■	■							
Created Multiple Support Types in One Region	■	■							
Control of Support Parameters	■	■							
Multiple Support Types	■	■							
Angled Supports	■	■							
Perforations, Tooth Patterns, Intrusion, Sizing and Distribution of Support Walls	■	■							
Automatic Support Generation	■	■							
Export of STL and SpaceClaim Files	■	■							
Export of Additive Manufacturing Equipment (OEM) Build Files	■	■							
Cost Estimation	■	■							
Layer/Scan Vector Visualization	■	■							
WORKBENCH ADDITIVE									
Nonlinear and Temperature Dependent Material Properties		■							
Material Creep Properties		■							
Thermo-Mechanical Coupled Strain Solution		■							
Native Mechanical Environment		■							
Part Distortion and Residual Stress after Baseplate Cut-Off and/or Support Removal		■							
Directional Part and Support Removal		■							
Recoater Interference Detection		■							
Identification of High Strain (Crack) Locations		■							
Layer by Layer Stress and Distortion Visualizations		■							
Option to Output Only the Last Layer of the Build or Every Nth Layer		■							
Distortion Compensation		■							

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/ ADDITIVE MANUFACTURING	ADDITIVE PRINT	ADDITIVE SUITE							
WORKBENCH ADDITIVE									
User-Defined Step Option as 1st or Last Sequence Step		■							
Layered Tetrahedral Meshing		■							
Post Build Heat Treatment		■							
Import of STL Supports		■							
Inherent Strain Isotropic and Anisotropic		■							
Strain Scaling Factor for Thermal and Structural Analyses		■							
STL Files can be Exported from STL Supports		■							
Voxel Mesh Generation		■							
Wizards to Transfer Results from Additive Print to Workbench Additive		■							
Calibration setup in AM Wizard		■							
AM Bond Implementation		■							
Layer End Temperature Output		■							
Process Simulation for Directed Energy Deposition		■							
Direct Energy Deposition - Wizard		■							
Direct Energy Deposition - G-Code Clustering		■							
Direct Energy Deposition - Manual Clustering		■							
Automatic Distortion Compensation Optimization		■							
Scan Pattern Based Anisotropic Strain		■							
Machine Learning Thermal Strain		■							
"Binder Jet Sintering		■							
Sintering Material Model		■							
Sintering Material Model - Wizard		■							
ADDITIVE PRINT									
Nonlinear and Temperature Dependent Material Properties	●	●							
Uniform Assumed Isotropic Strain	●	●							
Scan Pattern Based Anisotropic Strain	●	●							
Thermal Ratcheting Based Anisotropic Strain	●	●							

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/ ADDITIVE MANUFACTURING	ADDITIVE PRINT	ADDITIVE SUITE							
ADDITIVE PRINT									
Stress-Based Automatically Generated Supports	●	●							
Part Distortion and Residual Stress (as-built)	●	●							
Directional Part and Support Removal	●	●							
Part Distortion and Residual Stress after Baseplate Cut-Off and/or Support Removal	●	●							
Distortion Compensation	●	●							
Recoater Interference Detection	●	●							
Identification of High Strain (Crack) Locations	●	●							
Input Strain Hardening Factor	●	●							
Import of STL Supports	●	●							
Subvoxel Material Density Assignment	●	●							
Layer by Layer Stress, Distortion and Blade Crash Visualizations	●	●							
Build File Readers for Multiple AM Machines	●	●							
Auto Queue Multiple Successive Simulations	●	●							
Additive Print to Workbench Additive Transfer for Post Processing	●	●							
ADDITIVE SCIENCE									
Meltpool Dimensions		●							
Detailed Thermal History		▲							
% Lack of Fusion Porosity		●							
Sensor Measurement Predictions		▲							
Ability to Add User-Define Materials		●							
Material Tuning Wizard		▲							
Microstructure Prediction		●							
Parallel Solving of 2D Microstructure		●							

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/ FLUIDS	CFD Pro	CFD Premium	CFD Enterprise	BladeModeler	Vista TF
FLUENT CAPABILITIES					
Steady-State Flow	●	●	●		
Transient Flow	●	●	●		
2D and 3D Flow	●	●	●		
Compressible and Incompressible Flow	●	●	●		
Customizable Material Properties	●	●	●		
Non-Newtonian Viscosity	●	●	●		
Real fluids models (steam, refrigerants, cryogenics, NIST data)		●	●		
Pressure-Based Solver	●	●	●		
Density-Based Solver		●	●		
Native Multi-GPU Solver			●		
Coupled and Segregated Solvers	●	●	●		
Subsonic Flow	●	●	●		
Supersonic and Hypersonic ¹⁴ Flow		●	●		
Turbulence – RANS models	●	●	●		
Turbulence - LES/SAS/DES		●	●		
Heat Transfer - Natural Convection, Conduction and CHT	●	●	●		
Heat Transfer - Shell Conduction	●	●	●		
Thermal Radiation - Participating & Transparent Media		●	●		
ECAD Import for PCB Thermal Modeling		●	●		
Expressions, Inc. Functions of Solution Values	●	●	●		
Flow-Drive Solid Motion (6-DOF)		●	●		
Porous Media	●	●	●		
Reduced Order Model (ROM) creation		●	●		
Dynamic/Moving-Deforming Mesh		●	●		
Overset Mesh		●	●		
Dynamic Solution-Adaptive Mesh Refinement		●	●		

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FLUENT CAPABILITIES					
Fan Model	●	●	●		
Virtual Blade Model		●	●		
Inert and Massless Particle Tracking	●	●	●		
Coupled Particle Tracking (with Mass)		●	●		
Wall Film Modeling		●	●		
Macroscopic Particle Model		●	●		
Reacting/Combusting Particles		●	●		
Particle Break-Up and Coalescence		●	●		
Dense Particle Coupling (DDPM) and Granular Particle modeling		●	●		
Wall Erosion Modeling		●	●		
Discrete Element Model (DEM)		●	●		
Free Surface VOF model		●	●		
Regime change between particle and free surface (VOF <-> DPM)		●	●		
Multiphase flow modeling		●	●		
Complex Multiphase Regime Transitions		●	●		
Surface Tension		●	●		
Gas – Liquid – Solid Phase Change models, including Cavitation, Boiling, Evaporation, Condensation, Solidification and Melting		●	●		
Reactions Between Fluid Phases		●	●		
Non-reacting Multicomponent Flow/Species Transport	●	●	●		
Reacting Multicomponent Flow/Species Transport		●	●		
Extensive Combustion modeling including FGM		●	●		
Finite Rate Chemistry modeling		●	●		
Pollutants and Soot Modeling		●	●		
Ability to use Model Fuel Library Reaction Mechanisms		●	●		
Comprehensive Surface-Kinetics		●	●		
Flamelet Table Generation		●	●		

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FLUENT CAPABILITIES					
Virtual cooling hole models (effusion and blade film cooling)		●	●		
Electrochemistry modeling for Li-ion Batteries		●	●		
Battery swelling modeling		●	●		
Battery life modeling		●	●		
Fuel Cell modeling		●	●		
Multiple Stationary & Rotating Reference Frames	●	●	●		
Periodic Interfaces		●	●		
Mixing Plane/Stage Frame Change Interface		●	●		
Sliding-Mesh/Transient Rotor-Stator Frame Change Interface		●	●		
Pitch Change across Frame Change Interfaces		●	●		
Aerodynamic damping (Blade Flutter)		●	●		
Dedicated Aerodynamics workspace (Fluent Aero)			●		
In-flight Aircraft Icing modeling			●		
Adjoint Solver for Shape Optimization		●	●		
Parameter-driven mesh morphing and optimization		●	●		
Parameters	●	●	●		
Design Point Studies	▲	●	●		
Design of Experiments	▲	●	●		
Local Parallel Solving	●	●	●		
Distributed Parallel Solving		●	●		
Batch solving		●	●		
Parallel Solving on Cloud launched from Desktop		●	●		
Workbench Integration		●	●		
Simulation Reports	●	●	●		
Functional Mockup Unit (FMU) Coupling		■	■		
Fluid Structure Interaction (FSI) with Ansys Mechanical		■	■		

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FLUENT CAPABILITIES					
Fluid Thermal Deformation with Ansys Mechanical		■	■		
Built-in FEA solver for Fluid-Structural and Fluid-Thermal Stress Coupling		●	●		
Fluid Electro-Thermal Interaction		■	■		
Electromechanical Thermal Management		■	■		
Aero-optics		■	■		
Aero Acoustics and Vibro Acoustics		●	●		
Acoustic-Structural		●	●		
Fluid Magnetohydrodynamics (MHD)		●	●		
FLUENT MESHING CAPABILITIES					
Polyhedral, Poly-Hexcore, Hexcore, Tet and Prism meshing	●	●	●		
Mosaic-Enabled Meshing Technology	●	●	●		
Task-Based Workflow - Watertight Geometries	●	●	●		
Task-Based Workflow - Fault Tolerant Geometries		●	●		
Parallel Mesh Generation		●	●		
Wrap meshing		●	●		
Rapid Octree meshing		●	●		
CFX CAPABILITIES					
Steady-State Flow		●	●		
Transient Flow		●	●		
Customizable Material Properties		●	●		
Non-Newtonian Viscosity		●	●		
Real fluids models (steam, refrigerants, cryogenics, NIST data)		●	●		
Flow-Drive Solid Motion (6-DOF)		●	●		
Pressure-Based Coupled Solver		●	●		
Expressions, inc. functions of solution values		●	●		
Dynamic/Moving-Deforming Mesh		●	●		

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CFX CAPABILITIES					
Compressible and Incompressible Flow		●	●		
Porous Media		●	●		
Subsonic Flow		●	●		
Supersonic Flow		●	●		
Turbulence – RANS models		●	●		
Turbulence - LES/SAS/DES		●	●		
Heat Transfer - Natural Convection, Conduction and CHT		●	●		
Thermal Radiation - Participating & Transparent Media		●	●		
Particle Tracking (Discrete Phase Modeling)		●	●		
Liquid Droplets (including Evaporation)		●	●		
Reacting/Combusting Particles		●	●		
Wall Erosion Modeling		●	●		
Free Surface VOF model		●	●		
Surface Tension		●	●		
Multiphase flow modeling (Eulerian)		●	●		
Gas – Liquid – Solid Phase Change models, including Cavitation, Boiling, Evaporation and Condensation		●	●		
Reactions Between Fluid Phases		●	●		
Multicomponent Flow/Species Transport		●	●		
Combustion Modeling		●	●		
Acoustics / Aerodynamic noise		●	●		
Blade film cooling model		●	●		
Multiple Stationary & Rotating Reference Frames		●	●		
Periodic Interfaces		●	●		
Mixing Plane / Stage Frame Change Interface		●	●		
Transient Rotor-Stator Frame Change Interface		●	●		
Pitch Change Across Frame Change Interfaces		●	●		

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CFX CAPABILITIES					
Pitch Change across Frame Change Interfaces		●	●		
Aerodynamic Damping (Blade Flutter Analysis)		●	●		
Transient Blade Row		●	●		
Time Transformation		●	●		
Fourier Transformation		●	●		
Harmonic Analysis		●	●		
Automated Speedline / Performance Map creation		●	●		
Local and Distributed Parallel Solving		●	●		
Parallel Solving on Cloud launched from Desktop		●	●		
Workbench Integration		●	●		
Functional Mockup Unit (FMU) Coupling		●	●		
Fluid Structure Interaction (FSI) with Ansys Mechanical		■	■		
Fluid Thermal Deformation with Ansys Mechanical		■	■		
Fluid Electro-Thermal Interaction		■	■		
Electromechanical Thermal Management		●	●		
Fluid Magnetohydrodynamics (MHD)		●	●		
TURBOGRID CAPABILITIES					
Automatic block-structured Hex meshing		●	●		
Predefined block topologies for blades		●	●		
Axial, Radial and Mixed machines		●	●		
Splitter blades		●	●		
Compressors, Fans, Turbines, Pumps		●	●		
Rounded and sharp leading/trailing edges		●	●		
Partial tip clearances		●	●		
Automated hybrid meshing for secondary flow paths, complex tips, partial tip and hub gaps (buttons), and blends		●	●		
Automatic addition of approximate blends/filletts		●	●		

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/ FLUIDS	CFD Pro	CFD Premium	CFD Enterprise	BladeModeler	Vista TF
TURBOGRID CAPABILITIES					
Support for multiple input formats (CAD, NDF, profiles/curves)		●	●		
Automatic creation of high-fidelity CAD from profile/curve input		▲	▲		
Mesh refinement maintaining consistent mesh topology		●	●		
BLADEGEN AND BLADEEDITOR CAPABILITIES					
Turbomachinery blade design				●	
Turbo-specific CAD geometry creation				●	
Single CAD definition for CFD and FEA				●	
Flow Path CAD geometry creation				●	
Blade CAD geometry creation				●	
Splitter Blade CAD geometry creation				●	
Create high fidelity variable radius blade blends				●	
Flank milled blades				●	
VISTA CAPABILITIES					
Meanline / 1D Turbomachinery Design				●	
Centrifugal Compressor Design (CCD)				●	
Centrifugal Pump Design (CPD)				●	
Radial Turbine Design (RTD)				●	
Axial Fan Design (AFD)				●	
Through-Flow Quasi-2D Analysis for Turbomachinery Design					●
Centrifugal Compressor Map creation (CCM)					●
CFD POST CAPABILITIES					
Simulation Reports		●	●		
Turbo-specific Surface and Line locators		●	●		
Turbo coordinate systems		●	●		
Turbo macros and calculations		●	●		
Multiple case file comparison		●	●		

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- Aqwa = Aqwa

/ FLUIDS	CFD Pro	CFD Premium	CFD Enterprise	BladeModeler	Vista TF
CFD POST CAPABILITIES					
Point, Line, Surface and Volume locators		●	●		
GPU accelerated animations		●	●		
Keyframe animations		●	●		
Charts		●	●		
Contours, Vectors, Streamlines, Particle Tracks		●	●		
Expressions and quantitative calculations		●	●		
Operating Map post-processing		●	●		
Mesh quality metrics and calculations		●	●		
Polyflow Results Post-processing	●	●	●		
POLYFLOW CAPABILITIES					
Viscoelasticity and Yield Stress models			●		
Extrusion & Co-extrusion modeling	●	●	●		
Blow Molding modeling	●	●	●		
Fiber Spinning modeling	●	●	●		
Thermoforming modeling	●	●	●		
Screw extruder modeling			●		
2D and 3D forming			●		
Mixers and Filling modeling			●		
FORTE CAPABILITIES					
Automatic On-the-fly Mesh Generation with Dynamic Refinement		●	●		
Species Transport		●	●		
Finite Rate Chemistry		●	●		
Pollutants and Soot Modeling		●	●		
Sparse Chemistry Solver Dynamic Cell Clustering Dynamic Adaptive Chemistry		●	●		
Ability to Use Model Fuel Library Mechanisms		●	●		
Flame-speed from Fuel-Component Library		●	●		

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/ FLUIDS	CFD Pro	CFD Premium	CFD Enterprise	BladeModeler	Vista TF
FORTE CAPABILITIES					
DPIK Spark-Ignition Model		●	●		
Internal Combustion Engine Specific Solution		●	●		
Ge-rotor, screw compressor and scroll compressor modeling		●	●		
CHEMKIN-PRO CAPABILITIES					
Species Transport			●		
Finite Rate Chemistry			●		
Multiphase Reactions			●		
Pollutants and Soot Modeling			●		
Sparse Chemistry Solver Dynamic Cell Clustering Dynamic Adaptive Chemistry			●		
Ability to Use Model Fuel Library Mechanisms			●		
Flame-speed from Fuel-Component Library			●		
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			●		
Flame speed and Ignition Table Generation			●		
Reaction Sensitivity, Uncertainty and Path Analysis			●		
Surrogate Blend Formulation and Optimization			●		
Mechanism Reduction			●		
Reaction Workbench			●		
Model Fuel Library		●	●		
FENSAP-ICE CAPABILITIES					
Simulation of Standard Droplets, SLD and Ice Crystals			●		
Inclusion of Vapor/Humidity Effects on Icing			●		

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/ FLUIDS	CFD Pro	CFD Premium	CFD Enterprise	BladeModeler	Vista TF
FENSAP-ICE CAPABILITIES					
Icing Environments of Appendices C, O (SLD) and D (Ice Crystals)			●		
Pre-Defined Droplet Size Distributions			●		
Simulation of Rime, Glaze and Mixed Icing			●		
Single and Multi-Shot Icing Simulations with Mesh Deformation for Prediction of Ice Accretion and Aerodynamic Performance Degradation			●		
Single and Multi-Shot Icing Simulations with Automatic Re-Meshing for Prediction of Ice Accretion and Aerodynamic Performance Degradation			●		
Conjugate Heat Transfer (CHT) for Anti and De-Icing Simulations			▲		
Ice Cracking			●		
Ice Shedding			●		
ACCESS TO ADDITIONAL APPLICATIONS					
DesignModeler				●	
Discovery Modeling / SpaceClaim		●	●		
Ansys Meshing (Workbench Meshing)	●	●	●		
ICEM CFD		●	●		
EnSight Enterprise		●	●		
DesignXplorer		●	●		

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/ AUTONOMOUS VEHICLE SIMULATION	AVxcelerate for Headlamp	AVxcelerate for Sensors	AVxcelerate for Autonomy
HEADLAMP SIMULATION			
Lighting System Control	●	●	
Virtual Measurement	●		
Glaring Simulation	●		
IIHS / C-IASI / FMVSS 108 Regulation Validation	●		
SENSORS SIMULATION			
Ground-Truth Sensor	▲	▲	●
Optical Camera Sensor		●	
LiDAR Sensor		●	
Radar Sensor		●	
Thermal Camera Sensor		●	
Multi Sensors		●	
ENVIRONMENT SIMULATION			
Basic Driving Scenario	●	■	●
Advanced Driving Scenario	■	■	●
Exploration of Driving Scenario		■	●
Advanced Vehicle Dynamic	■	■	■
MiL/SiL Connectivity	●	●	●
HiL Connectivity		●	
Cloud Scalability		▲	●
PREPARATION & VISUALIZATION			
Environment Preparation	●	●	
Headlamp Preparation	●		
Sensor Models Preparation		●	
Results Visualization			●
Libraries of Assets & Scenario	●	●	●

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/ DIGITAL TWIN	TWIN BUILDER	TWIN AI								
SYSTEM SIMULATION, VALIDATION AND DIGITAL TWINS										
Integrated Graphical Modeling Environment	●	●								
Standard Modeling Languages and Exchange Formats	●									
Mult-domain Systems Modeler	●									
Extensive OD Application-Specific Libraries	●									
3rd Party Tool Integrations	●	●								
3D ROM	●	▲								
Embedded Software Integration	●	●								
Mult-Domain System Simulation	●	▲								
Rapid HMI Prototyping	●									
System Optimization	●	▲								
XIL Integration	●									
IIOT Connectivity (Microsoft® Azure® IoT, Microsoft Azure Digital Twins, PTC ThingWorx®, SAP Predictive Asset Insights, Rockwell Automation Emulate 3D and Rockwell Studio 5000)	●	●								
Digital Twin Runtime Deployment	▲	●								
Hybrid Analytics		●								

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/ EMBEDDED SOFTWARE	SCADE Architect	SCADE Suite	SCADE Display	SCADE Test	SCADE Solutions for A661	Scade One				
MODEL-BASED SYSTEMS ENGINEERING										
Systems Requirements Analysis	▲	▲				▲				
System & Software Architecture Design	●	●				●				
SysML Models Import	●	●				▲				
Collaborative Work through Libraries and Model Synchronizations	●	●								
Real-time Collaboration						●				
Model Checks	●	●								
Model Diff/Merge	●	●								
System/Software Bi-Directional Sync	●	●								
System/Software Integration						▲				
Model Sharing and IP Protection	●	●								
Model-Based Interface Control Document Production	●	●								
Configurable for Industry Standards (IMA, AUTOSAR, FACE etc.)	●	●								
Product Configuration for Automotive/AUTOSAR	●	●								
EMBEDDED CONTROL & HMI SOFTWARE										
Traceability with Requirement Management Tools	●	●	●	●	●					
Automatic Document Generation	●	●	●	●	●					
Data Flow and State Machine Modeling		●			●	●				
Model-Based Prototyping and Specifications of HMIs			●		●					
Debug & Simulation Capabilities		●	●		●	●				
Extensive Set of Libraries		●	●	●	●	▲				
Plant Model Co-Simulation Enabled (Simulink import, FMI import/export)		●	●	●	●					
On Host and on Target Testing		●	●	●	●					
Model and Code Structural Coverage		●	●	●	●					
Python APIs		●	●	●	●	●				

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/ EMBEDDED SOFTWARE	SCADE Architect	SCADE Suite	SCADE Display	SCADE Test	SCADE Solutions for A661	Scade One				
EMBEDDED CONTROL & HMI SOFTWARE										
Formal Verification		●								
Timing and Stack Optimization		●								
Automatic Code Generation		●	●			●				
AUTOSAR-Compliant Code Generation		●								
Support of OpenGL, OpenGL SC and OpenGL ES			●		●					
Support of ARINC 661		■	■		■					
Certification Kits for DO-178C, EN50128, ISO 26262, IEC 61508		●	●	●	●					

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MATERIALS DATA MANAGEMENT													
Granta MI Database - "Gold Source" System to Store Corporate Materials Information	●	●											
Manage Specialist Materials Data Types	●	●											
Manage Meta-Data and Context for Materials	●												
Traceability for All Materials Data	●	●											
Favorites List: Personal, Public	●	●	▲	▲									
Access Control	●	▲											
Version Control	●												
Multiple Unit System Support	●	●	●	●	●								
Admin UI to Setup and Configure Database	●												
Template Data Structures for Key Materials Use Cases: Metals, Composites, Additive Manufacturing	●												
Template for Simulation		●											
Web App for Fast Upload and Export of Materials Data	●	●											
Browse Materials Data	●	●	●	●									
Edit and Update Materials Data	●	●	▲	▲									
Search and Query Materials Data	●	●	●	●									
Represent Property Data in Interactive Charts	●	▲	●	●									
Comparison Tables and Comparison Charts	●	▲	●	●									
Generate Reports on Selected Materials Records	●												
Export Data to Excel and Third Party Software	●	▲	●	●									
Personalize System Homepages and User Profiles	●												
Configure Web App UI for Specific User Groups	●												
Private Cloud with Azure and AWS	●	●											
Single Sign On	●	●											
Ansys Material Calibration	●	●											
Gateway Powered by AWS		●	●										

/ CONNECT	Granta Mi Enterprise	Granta Mi Pro	Granta Selector	Granta Edupack	Materials Data for Simulation	Minerva	Optislang Pro	Optislang Premium	Optislang Enterprise	Modelcenter Pro	Modelcenter Premium	Modelcenter Enterprise	System Architecture Modeler
MATERIALS DATA ANALYSIS													
Interactive Plotting of Data: Scatter, Contour, Error Bar, Surface, Plotyy, Semilogx, Semilogy, Loglog	●												
Custom Curve Fitting	●												
Cross-Table Comparisons of Materials Data	●												
Scripting Toolkit for Python	●												
Granta MI AI+	●												
DATA FLOW MANAGEMENT													
Design and develop material data flow	●												
Execute material data flows - Processes, Approvals, Notifications	●												
INTEGRATION WITH CAD, CAE, PLM													
Ansys Workbench	●	●	▲	▲	●								
Ansys Electronics Desktop	●	●			●								
Ansys Discovery	●	●	▲	▲	●								
Ansys LS-DYNA	●	▲											
Ansys Minerva	●												
Ansys optiSLang	●												
Abaqus	●	●											
ANSA	●												
HyperMesh	●	●											
Creo	●	●											
NX & Simcenter 3D	●	●											
Windchill	●												
Teamcenter	●												
Material Card Connect - Automated File Export	●												
File Export (CATIA v5, SOLIDWORKS, and others)	●	▲	▲	▲									
CAD Connector: NX	●												
RESTRICTED SUBSTANCES & SUSTAINABILITY													
Data Structures to Support Analytics, Store Specs, Materials, Legislations, Substances, Parts	●												
Report on Risk for Materials and Process Portfolio	●												

/ CONNECT	Granta Mi Enterprise	Granta Mi Pro	Granta Selector	Granta Edupack	Materials Data for Simulation	Minerva	Optislang Pro	Optislang Premium	Optislang Enterprise	Modelcenter Pro	Modelcenter Premium	Modelcenter Enterprise	System Architecture Modeler
RESTRICTED SUBSTANCES & SUSTAINABILITY													
Build and Edit Bills of Materials within a Web App	●												
At-a-Glance Restricted Substance Compliance for a BoM	▲												
Run Reports Across Multiple BoMs	▲												
Integrate Reporting with PLM, CAD	▲												
Sustainability Assessment of Bill of Materials (Cradel-Gate)	●		▲										
GRANTA MI - ADDITIVE													
Traceability and Capture of Additive Manufacturing Data	●												
AM Data Analytics Including Machine Learning	●												
Integration with CAD CAE and PLM Systems	●												
MATERIALS SELECTION & RELATED TOOLS													
Reference Data for Materials Selection on PC/Laptop			●	●									
Interactive 'Ashby Charts' of Materials Property Space	▲		●	●									
Systematic Materials Selection Methodology		▲	●	●									
Filter Materials Based on Property Profile	●	●	●	●									
Filter Materials Based on Links to Other Materials / Processes / Objects	▲		●	●									
Materials Substitution and Equivalency - 'Find Similar'			●	●									
Performance Index Finder			●	●									
Engineering Solver - Convert Engineering Requirements to Materials Properties			●	●									
Synthesizer - Predict Properties of Hybrid Materials			●	●									
Part Cost Estimator			●	●									
Selection Reports and Export of Charts for Presentations			●	●									
Eco Audit for a Product or Conceptual Design			●	●									
Early stage battery pack design, configuration and performance evaluation - incl. battery cells database			●	●									
DATA LIBRARY FOR INDUSTRY													
Core MaterialUniverse™ Data	●	●	●		▲								
Core JAHM Curve Data	●	●	●										
Advanced Metals Data	■		■										

● Full Support ▲ Limited Capability ■ Requires more than 1 product

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MATERIALS DATA													
Advanced Polymers Data	●		■										
Advanced Composites Data	■		■										
Advanced Medical Data	■		■										
Advanced Aero Data	■	■	■										
Advanced ESDU Aero Alloys	■	■	■										
Advanced Additive Manufacturing Data	■		■										
Advanced Eco Design	■		■										
Advanced Electromagnetic Data	■	■	■		●								
Advanced High Temperature Alloy Data	■		■										
Materials Teaching Resources (EduPack)			■										
DATA MANAGEMENT													
Data and Project Comparison						●							
Enhanced Branching						●							
Custom Digital Thread Configurability						●							
Automatic file conversion						●							
New folder widget, saved search for details list						●							
Added file support for metadata extraction						●							
Query Builder						●							
Metadata Extraction						●							
3D Viewer with Rich Exploration Options						●							
ECAD Viewer						●							
SCADE Project File Support						●							
Revision Management						●							
File Format Conversion						●							

/ CONNECT	Granta Mi Enterprise	Granta Mi Pro	Granta Selector	Granta Edupack	Materials Data for Simulation	Minerva	Optislang Pro	Optislang Premium	Optislang Enterprise	Modelcenter Pro	Modelcenter Premium	Modelcenter Enterprise	System Architecture Modeler
PROCESS MANAGEMENT													
Work Request History Report						●							
New Voting Dialog						●							
Enhanced Gantt Chart						●							
Change Notice Comparison						●							
Task Completion						●							
Simulation Task Review						●							
APPLICATION MANAGEMENT													
New Applications Page Layout						●							
Publish and Deploy Apps (optiSLang supported out-of-the-box)						●							
Ansys LS-Dyna Batch Job Template						●							
Job Submission to Ansys HPC Cluster or Ansys Cloud						●							
Access Local Applications						●							
Run Apps without Input Files						●							
Remote Virtual Desktop						●							
INTEGRATIONS													
Integration in Fluent							●	●	●				
Ansys Electronics Desktop Add-In						●	●	●	●				
Integration with Ansys Workbench							●	●	●				
Integration with Ansys Materials Product Family						●	●	●	●				
Two-Way Integration with ModelCenter								●	●				
Integration with optiSLang						●							
German Language Support						●							
Integration with LS-OPT							●	●	●				

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TOOL INTEROPERABILITY													
Support of HPC Solver Licenses								●	●				
ORCHESTRATION AND AUTOMATION													
Build and Automate Workflows								●	●				
Integrate 3rd Party Tools								●	●				
App Generation Wizard									●				
Test-Run and Desktop App								●	●				
Classic Design of Experiments							●	●	●				
Sampling and Sensitivity Analysis							●	●	●				
Robust Design Optimization							●	●	●				
PRODUCT IMPROVEMENT													
Scalar Meta-Modeling (including test data)							●	●	●				
Signal/Field Meta-Modeling (including sensor & 3D scan data)									●				
Modeling of Imperfect Surfaces for UQ									●				
AI for Metamodeling (including algorithms from Probaligence)									●				
Optimization & Sensitivity Analysis							●	●	●		●	●	
Model Calibration							●	●	●				
Concurrent Design Point Variations								● ³	● ⁷				
PRODUCT ROBUSTNESS													
Robust Design & Reliability Analysis								●	●				
DASHBOARDS AND REPORTS													
Dashboard 2.0						●							
Custom Widget Framework						●							
Bookmark Dashboards						●							

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AUTOMATE ANY MODELING AND SIMULATION TOOL													
Automate File I/O tools							●	●		●	●	●	
Scripting with VBScript, JScript, Java, Perl, and Python							●	●		●	●	●	
Integration with 3rd Party Tools							●	●		●	●	●	
AUTHOR ENGINEERING WORKFLOWS													
Sequence							●	●		●	●	●	
Loop							●	●		●	●	●	
If-Then Branch							●	●		●	●	●	
Parallel Branch							●	●		●	●	●	
Link Editor							●	●		●	●	●	
AUTOMATICALLY EXECUTE THE WORKFLOW													
Single Execution										●	●	●	
Multi-Run Trade Studies										●	●	●	
Run in Parallel										●	●	●	
SHARE AUTOMATED ANALYSES AND WORKFLOWS													
Remote Execution										●	●	●	
GAIN INSIGHT TO THE DESIGN PROBLEM													
Trade Study: Parametric Study							●	●	●		●	●	
Trade Study: Design of Experiments (DOE)							●	●	●		●	●	
Trade Study: Adaptive Design of Experiments							●	●	●		●	●	
Sensitivity Analysis							●	●	●		●	●	
VISUALIZE THE DESIGN SPACE													
2D Bar Plot											●	●	
2D Line Plot											●	●	
2D Scatter Plot											●	●	
3D Scatter Plot											●	●	
Carpet Plot											●	●	
Contour Plot											●	●	

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VISUALIZE THE DESIGN SPACE													
Histogram Plot											●	●	
Interaction Effects Plot											●	●	
Main Effects Plot											●	●	
Main Effects Summary Plot											●	●	
Parallel Coordinates											●	●	
Prediction Profiler Contour Plot											●	●	
Prediction Profiler XY Plot											●	●	
Scatter Matrix											●	●	
Variable Importance Plot											●	●	
Variable Importance Summary Plot											●	●	
PROBABILISTIC ANALYSIS													
Monte Carlo Analysis											●	●	
DESIGN OF EXPERIMENTS (COMMON)													
Box-Behnken											●	●	
Custom											●	●	
Central Composite											●	●	
Eighth Fractional Factorial											●	●	
Face Centered Central Composite											●	●	
Foldover											●	●	
Franklin-Bailey 2 Level Fractional Factorial											●	●	
Full Factorial											●	●	
Half Factorial											●	●	
Latin-Hypercube											●	●	
Parameter Scan											●	●	
Plackett-Buman											●	●	
Selected 2 Level Fractional Factorial											●	●	
Sixteenth Fractional Factorial											●	●	
Taguchi 2 Level Orthogonal Array											●	●	

/ CONNECT	Granta Mi Enterprise	Granta Mi Pro	Granta Selector	Granta Edupack	Materials Data for Simulation	Minerva	Optislang Pro	Optislang Premium	Optislang Enterprise	Modelcenter Pro	Modelcenter Premium	Modelcenter Enterprise	System Architecture Modeler
DESIGN OF EXPERIMENTS (NORTH AMERICA ONLY)													
Noesis Adaptive DOE											●	●	
CONNECT ANY ENGINEERING ANALYSIS TO SYSTEM ARCHITECTURE MODELS													
Ansys System Architecture Modeler										●	●	●	
NoMagic MagicDraw® / Cameo®										●	●	●	
IBM Rhapsody®										●	●	●	
PTC Windchill Modeler®										●	●	●	
Vitech (Zuken) GENESYS®										●	●	●	
Capella										●	●	●	
SIMULATE COMPLEX SYSTEM BEHAVIOR													
Execute State Machine Diagrams (Cameo®)													●
VERIFY REQUIREMENTS													
Physical Requirements										●	●	●	
Behavioral Requirements (Cameo® and Windchill Modeler®)										●	●	●	
SYSTEMS MODELING													
System Architecture Modeling using SysML v2													●
Real-time collaboration													●
Model Configuration Management													●
Structural Modeling													●
Requirements Modeling													●
Requirements Verification Using Simulation (via ModelCenter)													●

/ SAFETY ANALYSIS	medini analyze	medini analyze for Semiconductors	medini analyze for Cybersecurity	Digital Safety Manager						
FUNCTIONAL SAFETY ANALYSIS										
Safety Concept Modeling	●	●								
Model Based Safety Analysis	●	●								
Reliability Prediction and Analysis	●	●								
Traceability and Validation Teamwork	●	●								
Integration into Engineering Environment	●	●								
Customization and Process Adaption	●	●								
Ansys Product Integration	●	●								
Reporting and Documentation	●	●								
Safety of Intended Functional Analysis	●	●								
CYBERSECURITY ANALYSIS										
Analysis Context Establishment and Asset Identification			●							
Systems Vulnerability Analysis			●							
Threat Identification			●							
Attack Trees, Attack Path Calculation and Attack Collections			●							
Threat Assessment and Treatment			●							
Requirement Analysis and Management			●							
Rich Traceability			●							
Teamwork and Integrated Task Management			●							
Reporting and Customization			●							
SAFETY MANAGEMENT										
Safety Plan				●						
Artifacts				●						
Safety Case (limited capability)				●						
Monitoring and Reporting (limited capability)				●						

- 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
- 7 = Ansys Granta Materials Data for Simulation
- 8 = Ansys Additive Suite
- 9 = Ansys Composite Cure Simulation
- 10 = Ansys SPEOS for NX & ANSYS SPEOS for Creo Parametric
- 11 = Ansys SPEOS
- 12 = Ansys SPEOS & Ansys SPEOS for NX
- 13 = Ansys CFD Pro - Ansys Fluent with a reduced set of capabilities
- DMP = Distributed-memory parallel
- SMP = Shared-memory parallel
- MAPDL = Mechanical APDL
- Explicit = Autodyn
- RBD = Rigid Body Dynamics
- Aqwa = Aqwa

/ OPTICS	Speos Pro	Speos Premium Design	Speos Premium Sensor	Speos Premium Visualization	Speos Enterprise	OpticStudio Pro	OpticStudio Premium	OptiStudio Enterprise						
ANSYS PRODUCTS EMBEDDED														
Ansys SpaceClaim: Direct Modeler	●11	●11	●11	●11	●11									
Ansys SpaceClaim: CATIA V5 interface	■11	■11	■11	■11	■11									
Ansys SpaceClaim: NX interface	■11	■11	■11	■11	■11									
Ansys SpaceClaim: PTC Creo interface	■11	■11	■11	■11	■11									
Ansys SpaceClaim: SolidWorks interface	■11	■11	■11	■11	■11									
Ansys Optics Launcher	●11	●11	●11	●11	●11	●	●	●						
GENERAL SOLVER CAPABILITIES														
Sequential Ray Tracing						●	●	●						
Monte Carlo Forward (Non-Sequential) Ray Tracing	●	●	●	●	●	●	●	●						
Monte Carlo Backward (Non-Sequential) Ray Tracing		●	●	●	●									
Dispersion	●	●	●	●	●	●	●	●						
Ambient Material	●	●	●	●	●	▲	▲	▲						
Surface Scattering (Diffusion)	●	●	●	●	●	●	●	●						
Volume Scattering (Diffusion)	●	●	●	●	●	●	●	●						
Deterministic Simulation with Irradiance Sensor	●	●	●	●	●									
Spectral Propagation	●	●	●	●	●	●	●	●						
Multiple Configuration System Modeling	●	●	●	●	●	●	●	●						
Black Box Encryption	●	●	●	●	●	▲	▲	▲						
Virtual BSDF					●13									
SOLVER PERFORMANCE														
Number of Parallel Application Instances per License	N/A	N/A	N/A	N/A	N/A	4	8	8						
CPU-based Parallel Solving on Local PC	●	●	●	●	●	●	●	●						
CPU-based Parallel Solving on Cluster	●	●	●	●	●									
CPU-based Parallel Solving with Ansys Cloud (from desktop)	●	●	●	●	●									

- Full Support
- ▲ Limited Capability
- Requires more than 1 product
- 10 = Ansys Speos for NX and Creo
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/ OPTICS	Speos Pro	Speos Premium Design	Speos Premium Sensor	Speos Premium Visualization	Speos Enterprise	OpticStudio Pro	OpticStudio Premium	OptiStudio Enterprise							
SOLVER PERFORMANCE															
Ansys RSM compatibility	●	●	●	●	●										
SPEOS Live Preview (GPU acceleration)		●12	●12	●12	●12										
SPEOS GPU Compute (GPU acceleration)		●	●	●	●										
Multi-GPU solving on Local PC					●										
ADVANCED PHYSICS															
Polarization Ray Tracing	▲	●	●	●	●	●	●	●							
Gradient Index Ray Tracing	●11	●11	●11	●11	●11	●	●	●							
Birefringence Ray Tracing	●	●	●	●	●	●	●	●							
Phosphor & Fluorescence Modeling	●	●	●	●	●	●	●	●							
1D RCWA Modeling							●	●							
2D RCWA Modeling								●							
PHOTOMETRY / RADIOMETRY															
Intensity	●	●	●	●	●	●	●	●							
Illuminance/Irradiance	●	●	●	●	●	●	●	●							
Luminance / Radiance	●	●	●	●	●	●	●	●							
3D Illuminance/3D irradiance	●	●	●	●	●	●	▲	▲	▲						
3D Energy Density		●	●	●	●	●	●	●							
WAVELENGTH RANGE															
Visible (360nm - 830 nm)	●	●	●	●	●	●	●	●							
UV (100nm - 360 nm)	●	●	●	●	●	●	●	●							
Near IR (830nm - 2.5 um)	●	●	●	●	●	●	●	●							
Far IR (2.5 um - 100 um)	●	●	●	●	●	●	●	●							
OPTICAL SOURCES															
Interactive Source (discrete)	●	●	●	●	●	●	●	●							
Surface Source	●	●	●	●	●	●	●	●							
Surface Source with variable exitance	●	●	●	●	●	●	●	●							

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/ OPTICS	Speos Pro	Speos Premium Design	Speos Premium Sensor	Speos Premium Visualization	Speos Enterprise	OpticStudio Pro	OpticStudio Premium	OptiStudio Enterprise							
OPTICAL SOURCES															
Ray file source - general	●	●	●	●	●	●	●	●							
Ray file source based on TM-25 format	●	●	●	●	●										
Luminaire source (IES, EULUMDAT)	●	●	●	●	●	●	●	●							
Source Group	●	●	●	●	●	▲	▲	▲							
Display Source		●	●	●	●										
Uniform Ambient Source		●	●	●	●										
HDRI Source		●	●	●	●										
CIE Sky Source		●	●	●	●										
Natural Light Source		●	●	●	●										
US Standard Atmosphere 1976 source			●		●										
Thermic Source			●		●	●	●	●							
DATA LIBRARIES															
Design Templates Collection						●	●	●							
Lens Catalog						●	●	●							
Optical Data in Materials Catalog	●	●	●	●	●	●	●	●							
Mechanical Data in Materials Catalog						●	●	●							
Coatings Catalog	●	●	●	●	●	●	●	●							
Test Plate Lists						●	●	●							
Luminaire Source Data Files							●	●							
Spectrum Data Files	●	●	●	●	●	●	●	●							
Standards / Regulations	●	●	●	●	●										
OPTIMIZATION															
Design of Experiment	●	●	●	●	●	●	●	●							
Sliders & Visual Optimizers						●	●	●							
Design Optimization	●	●	●	●	●	●	●	●							
Local Optimization						●	●	●							
Global Optimization	●	●	●	●	●	●	●	●							
Material Substitution						●	●	●							

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/ OPTICS	Speos Pro	Speos Premium Design	Speos Premium Sensor	Speos Premium Visualization	Speos Enterprise	OpticStudio Pro	OpticStudio Premium	OptiStudio Enterprise						
OPTIMIZATION														
Contrast Optimization						●	●	●						
High Yield Optimization						●	●	●						
Connector in Ansys optiSLang	●	●	●	●	●	●	●	●						
TOLERANCING														
Sensitivity Tolerancing						●	●	●						
Monte Carlo Tolerancing	●	●	●	●	●	●	●	●						
Quick Yield Analysis						●	●	●						
Tolerance Data Viewer						●	●	●						
Tolerance Data Analysis						●	●	●						
Composite Surface						●	●	●						
IMAGING SYSTEM DESIGN														
50 Sequential Field Points (Best For Aspheric Design)						●	●	●						
2000+ Sequential Field Points (Best For Freeforms)							●	●						
Ray Aiming						●	●	●						
Aspheric Optics						●	●	●						
Freeform Optics						●	●	●						
Diffraction Optics						●	●	●						
Stock Lens Matching Tool						●	●	●						
TrueFreeform							●	●						
Composite Surface						●	●	●						
IMAGING SYSTEM ANALYSIS														
Image Quality Analysis (Geometric and Diffractive)						●	●	●						
Image Simulation Analysis						●	●	●						
Full-Field Aberration Analysis						●	●	●						
LIGHTING AND ILLUMINATION SYSTEM DESIGN														
3D Textures		●	●	●	●									
Parabolic Surface	● ¹²	● ¹²			● ¹²	●	●	●						

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LIGHTING AND ILLUMINATION SYSTEM DESIGN															
TIR Lens	● ¹²	● ¹²			● ¹²	●	●	●							
Projection Lens	● ¹²	● ¹²			● ¹²	▲	▲	▲							
Optical Lens with pillows		● ¹²			● ¹²	▲	▲	▲							
Reflector with pillows		● ¹²			● ¹²	▲	▲	▲							
Light Guide		● ¹²			● ¹²										
Sharp Cut-Off Reflector		● ¹²			● ¹²										
Poly Ellipsoidal Surface		● ¹²			● ¹²										
Micro Optical Stripes		● ¹¹			● ¹¹										
Freeform Lens		● ¹¹			● ¹¹	▲	▲	▲							
Honeycomb Lens		● ¹²			● ¹²										
Interactive Photometric Simulation		● ¹²			● ¹²										
LASERS & FIBERS															
Gaussian Beams						●	●	●							
Laser Diode Modeling						●	●	●							
User-Defined Beam Profiles						●	●	●							
Single Mode Fiber Coupling						●	●	●							
Multi-Mode Fiber Coupling						●	●	●							
M2 & Beam Quality						●	●	●							
Physical Optics Propagation						●	●	●							
STRAY LIGHT ANALYSIS															
Ghost Focus Generator						●	●	●							
Ray Splitting						●	●	●							
Ray Scattering	●	●	●	●	●	●	●	●							
Importance Sampling						●	●	●							
Measured Surface Scattering Data	●	●	●	●	●		●	●							
Layer by Sequence / Path Analysis	●	●	●	●	●		●	●							

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STRAY LIGHT ANALYSIS																		
Light Path Finder	●	●	●	●	●													
Advanced Light Expert on Multiple Sensors		● ¹²	● ¹²	● ¹²	● ¹²													
HEAD-UP DISPLAY																		
HUD Optical Component Design		● ¹²			● ¹²	●	●	●										
HUD Optical Analysis		● ¹²			● ¹²													
HUD Optical Smart Design		● ¹²			● ¹²													
CAMERA SENSOR																		
Camera Sensor			●		●													
Field of View			●		●													
Export Sensor Grid as Geometry			● ¹²		● ¹²													
Inverse simulation with Irradiance Sensor			●		●													
Camera Raw Signal Export			●		●													
Camera Sensor Post Processing			●		●													
CMOS model from Lumerical Simulation			●		●													
Dynamic Effects in Camera Simulation			● ¹¹		● ¹¹													
LIDAR SENSOR																		
LiDAR Sensor			● ¹²		● ¹²													
LIDAR Raw Time of Flight generation			● ¹²		● ¹²													
LiDAR field of view simulation			● ¹²		● ¹²													
LiDAR Rotating & Scanning			● ¹¹		● ¹¹													
LIDAR Raw Time of Flight generation			● ¹¹		● ¹¹													
Dynamic Effects in LiDAR Simulation			● ¹¹		● ¹¹													
LIT & UNLIT APPEARANCE																		
Deterministic Simulation with Radiance Sensor				●	●													
360 View - Observer				● ¹²	● ¹²													

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/ OPTICS	Speos Pro	Speos Premium Design	Speos Premium Sensor	Speos Premium Visualization	Speos Enterprise	OpticStudio Pro	OpticStudio Premium	OptiStudio Enterprise						
LIT & UNLIT APPEARANCE														
360 View - Immersive				●	●									
Virtual Reality Lab				●	●									
Human Vision algorithm				●	●									
Human eye Sensor				● ¹²	● ¹²									
Local Adaption				●	●									
Dynamic Adaption				●	●									
Glare Simulation				●	●									
Sun Glasses influence				●	●									
Visibility and Legibility				●	●									
Night Vision Goggle				●	●									
Color deficiency evaluation				●	●									
HDR10 Screen Support				●	●									
MULTIPHYSICS SIMULATION & ANALYSIS														
Thermally Induced Refractive Index Changes	●	●	●	●	●	●	●	●						
Connection to Ansys Mechanical through Workbench					●									
STAR FEA Data Loading and Visualization Tools								●						
STAR FEA Data Fitting and Alignment Tools								●						
STAR System Viewer and Data Summaries								●						
STAR Performance Analysis								●						
STAR 2D Deformation Plot								●						
STAR Thermal Index Plot								●						
CFD Direct Index Fitting								●						
SIMULATION PREPARATION														
Source Group	●	●	●	●	●									
Geometry Group	●	●	●	●	●									
Local Meshing	●	●	●	●	●									
Polarizer		●	●	●	●									

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/ OPTICS	Speos Pro	Speos Premium Design	Speos Premium Sensor	Speos Premium Visualization	Speos Enterprise	OpticStudio Pro	OpticStudio Premium	OptiStudio Enterprise							
SIMULATION PREPARATION															
Light Field	● ¹¹	● ¹¹	● ¹¹	● ¹¹	● ¹¹										
Preset Manager	●	●	●	●	●										
Texture Mapping (Bump, Multi-Layer)		●	●	●	●										
POST PROCESSING															
Virtual Lighting Controller		●	●	●	●										
Photometric Numerical Certification	●	●	●	●	●										
Colorimetric Analysis	●	●	●	●	●										
Spectral Analysis		●	●	●	●										
Layer by Source		●	●	●	●										
Layer by Face		●	●	●	●										
Layer by Polarization		●	●	●	●										
Layer by Incident Angles			●		●										
CUSTOMIZATION & AUTOMATION															
Script Automation	●	●	●	●	●	●	●	●							
User-Defined Plugin for Surface, Objects, and Sources						●	●	●							
User-Defined Plugin for Scatter Profiles		● ¹¹	● ¹¹	● ¹¹	● ¹¹	●	●	●							
User-Configurable Shortcut Keys	●	●	●	●	●	●	●	●							
Result Post-Processing	●	●	●	●	●										
APPLICATION PROGRAMMING INTERFACE (API)															
Headless Solver	●	●	●	●	●	●	●	●							
MATLAB Interoperability						●	●	●							
Python API						●	●	●							
COM API	●	●	●	●	●	●	●	●							
.NET API						●	●	●							
TOOL INTEROPERABILITY															
Prepare for OpticsBuilder						●	●	●							
Export Reduced Order Model (ROM) to Speos						●	●	●							

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/ OPTICS	Speos Pro	Speos Premium Design	Speos Premium Sensor	Speos Premium Visualization	Speos Enterprise	OpticStudio Pro	OpticStudio Premium	OptiStudio Enterprise						
TOOL INTEROPERABILITY														
Export Optical Design to Speos						●	●	●						
Import Optical Design from OpticStudio	● ¹¹	● ¹¹	● ¹¹	● ¹¹	● ¹¹									
Lumerical Sub-Wavelength Model (LSWM) plugin simulation (Static Data Exchange)	● ¹¹	● ¹¹	● ¹¹	● ¹¹	● ¹¹	●	●	●						
Lumerical Sub-Wavelength Model (LSWM) plugin simulation (Dynamic Data Exchange)							●	●						
Lumerical Plugin for Metalens Simulation (Static Data Exchange)							●	●						
Speos LightBox Import	●	●	●	●	●									
Speos LightBox Import (with Password Protection)	●	●	●	●	●									
CAD INTEROPERABILITY														
Export to STEP, IGES, SAT, STL	●	●	●	●	●	●	●	●						
Import STEP, IGES, SAT, STL	●	●	●	●	●	●	●	●						
Dynamic Link to Creo Parametric	●	●	●	●	●		●	●						
Dynamic Link to Autodesk Inventor	●	●	●	●	●		●	●						
Part Designer - Static Parts						●	●	●						
Part Designer - Dynamic Parts							●	●						

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/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	Siwave	Siwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	Nuhertz FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics Enterprise
LOW FREQUENCY ELECTROMAGNETICS																
Electrostatics	●														●	●
AC Conduction	●														●	●
DC Conduction	●														●	●
Magnetostatics	●														●	●
Adaptive Field Mesh	●														●	●
AC Harmonic Magnetic	●														●	●
Electric Transient	●															●
MAGNETIC TRANSIENT																
Translational Motion	●														●	●
Fully Automatic Symmetrical Mesh Generation	●														●	●
Rotational Motion	●														●	●
Non-Cylindrical Motion	●														●	●
Advanced Embedded Circuit Coupling	●														●	●
Circuit Coupling with Adaptive Time Stepping	●														●	●
Direct and Iterative Matrix Solvers	●														●	●
ADVANCED ELECTROMAGNETIC MODELING																
Vector Hysteresis Modeling	●														●	●
Multi-Conductive Terminals Modelling (PCBs, Busbars etc.) / A-Phi Solver	●															●
3D Layout Component Integration (ECAD) for LF Electronics Design	●															
Hysteresis Modeling for Anisotropic Material	●														●	●
Frequency Dependent Reduced Order Models	●														●	●
Reduced Order Model Extraction (Linear-Motion, Rotational-Motion, No-Motion)	●														●	●
Functional Magnetization Direction	●														●	●
Magnetization/De- Magnetization Modeling	●														●	●
Manufacturing Dependent Core L Loss Models	●														●	●
Noise – Vibration Modeling	■														■	■
Temperature Dependent De-Magnetization Modeling	●														●	●

/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	Siwave	Siwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	Nuhertz FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics Enterprise
ADVANCED ELECTROMAGNETIC MODELING																
Temperature Dependent Core Loss Computation	●									●	●				●	●
Lamination Modeling	●									●	●				●	●
Magnetostriction and Magnetoelastic Modeling	●									●	●				●	●
Hardware in the Loop Modeling	●									●	●				●	●
Integrated Motor Synthesis and Design Kit	●									●	●				●	●
Integrated Planar Magnetics Synthesis and Design Kit	●									●	●				●	●
Temperature Dependent Litz Wire Modeling	●									●	●				●	●
Litz Wire Modeling	●									●	●				●	●
DESIGN SOLUTION FOR ELECTRICAL MACHINE																
Template-Based Magnetic Topologies								●								
Template-Based Cooling Topologies								●								
Adaptive Template-Based Topologies								●								
Magnetic 2D FEA with Analytical Solution								●								
Thermal 2D FEA								●								
3D Thermal and Fluid Network								●								
Optimization Workflow								■								
Temperature Dependent Duty-Cycle Analysis								●								
Manufacturing Effects Due to Winding Impregnation and Housing Interfaces								●								
Linear Structural 2D FEA								●								
Noise Vibration Harness Analytical Modelling								●								
Electrothermal Reduced Order Model (FMU)								●								
HIGH FREQUENCY ELECTROMAGNETICS																
Fully Automated Adaptive Mesh Refinement		●									●					
Multi-Frequency Broadband Adaptive Meshing		●									●					
Frequency Domain Finite Element (FEM) Analysis		●									●					
Frequency Domain Integral Equation (MoM) Analysis		●									●					
Time Domain FEM Analysis		●									●					
FEM Eigenmode Analysis		●									●					
MoM Characteristic Mode Analysis		●									●					
Physical Optics (PO) Analysis		●	●													●

● Full Support ▲ Limited Capability ■ Requires more than 1 product

/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	Siwave	Siwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	Nuhertz FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics Enterprise
HIGH FREQUENCY ELECTROMAGNETICS																
Shooting and Bouncing Ray+ (SBR+) Analysis		●	●													●
Physical Theory of Diffraction (PTD) Correction for SBR		●	●													●
Uniform Theory of Diffraction (UTD) Correction for SBR		●	●													●
Visual Ray Tracing for SBR+ Analysis		●	●													●
SBR+ Creeping Wave Correction for RCS of Curved Objects		●	●													●
Range Doppler Plots for Radar Scenario Analyses																●
Accelerated Doppler Processing (ADP) for SBR+ Range Doppler																●
RF Filter Synthesis and Design - Planar											●	●				
Digital Filter Synthesis and Design											●					
RF Filter Synthesis and Design - Cavity, Coaxial, SiW												●				
RF Filter Optimization												●				
RF Filter AI Driven Optimization													●	●		
Domain Decomposition Method (DDM) for Frequency Domain		●	●													●
FEM Analysis		●	●													●
Hybrid Finite Element/ Integral Equation Analysis		●	●													●
Efficient Wirebond Package Meshing		●	●													●
UI Coupled Finite Element and/or IE with SBR+ Analysis		●	●													●
Modal Wave Port Excitation		●	●													●
Terminal Wave Port Excitations		●	●													●
Lumped, Voltage and Current Excitations		●	●													●
Circuit Port Excitations		●	●													●
Parametric Antenna Excitations for SBR+		●	●													●
Floquet Excitations		●	●													●
Incident Wave Excitation		●	●													●
Magnetic Ferrite Bias Excitation		●	●													●
Perfect Electric and Magnetic Boundary		●	●													●
Finite Conductivity Boundary		●	●													●
Lumped RLC Boundary		●	●													●
Symmetry Boundary		●	●													●

/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	Siwave	Siwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	Nuhertz FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics Enterprise
HIGH FREQUENCY ELECTROMAGNETICS																
Periodic Boundary		●	●													●
Frequency Dependent Materials		●	●													●
Spatial XYZ Material Properties Via Dataset		●	●													●
Higher and Mixed Order Elements		●	●													●
Curvilinear Element Mesh Correction		●	●													●
S,Y,Z Matrix Results		●	●													●
E, H, J, P Field Results		●	●													●
Direct and Iterative Matrix Solvers		●	●													●
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		●	●												●	●
Linear Circuit Analysis with EM Dynamic link		●	●													●
Integrated Antenna Synthesis and Design Kit		●	●													●
5G SAR Standards Toolkit		●	●													●
Power Density and CDF		●	●													●
Radar Prep/Post Simulation Wizards		●	●													●
3D Component Libraries with User Controlled Parametrics		●	●													●
3D Component with Encryption Creation		●	●													●
3D Component with Encryption Utilization		●	●													●
RF Discharge Solver		●	●													●
Mutli-paction Solver		●	●													●
Volumetric SBR+ for 3D Dielectrics		●	●													●
Surface Roughness Model for SBR+		●	●													●
Accelerated Doppler Processing (ADP) for SBR+ Range-Doppler Analysis		●	●													●

/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	Siwave	Siwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	Nuhertz FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics Enterprise
POWER AND SIGNAL INTEGRITY BOARD SIMULATION CAPABILITIES																
Electronics Desktop 3D Layout GUI		●	●	●	●	●	●									●
ECAD Translation (Altium, Cadence, Mentor, Pulsonix, & Zuken)	●	●	●	●	●		●									●
MCAD (.x_b) Generation from ECAD		●	●	●	●				●	●						●
Lead Frame Editor		●	●	●	●											●
DC Voltage, Current and Power Analysis for PKG/PCB				●	●											●
DC and AC 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				●	●											●
Dynamically Linked Electromagnetic Field Solvers		●	●	●	●											●
Chip, Package, PCB Analysis (CPM)		●	●	●	●											●
Near-Field EMI Analysis		●	●		●											●
Far-Field EMI Analysis		●	●		●											●
EMI/EMC Full Board Scan					●											●
Characteristic Impedance (Zo) L PKG/PCB Scan					●											●
Full PCB/PKG Cross-Talk Scanning					●											●
TDR Wizard					●											●
TDR Analysis		●	●	●	●										●	●
Transient IBIS Circuit Analysis		●	●	●	●										●	●
Signal Net Analyzer					●											●
SerDes IBIS-AMI Circuit Analysis			●		●											●
Macro-Modeling (Network Data Explorer)	●	●	●	●	●											●
Steady State AC (LNA) Analysis		●	●	●	●											●

/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	Siwave	Siwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	Nuhertz FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics Enterprise
POWER AND SIGNAL INTEGRITY BOARD SIMULATION CAPABILITIES																
SPISIM Com and USB-C Compliance			●													●
SPISIM IBIS AMI Generation			●													●
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			●			●	●									●
3D Component Library			●			●	●									●
Reduced RLCG Matrix Operations			●			●	●									●
SPICE Equivalent Modeling Export			●			●	●			●						●
DCRL & ACRL Joule Heating Analysis with Icepak			●			●	●								●	●
Macro-Modeling (Network Data Explorer)			●			●	●									●
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							●									●

● Full Support ▲ Limited Capability ■ Requires more than 1 product

/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	Siwave	Siwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	Nuhertz FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics Enterprise
ELECTRONICS COOLING																
Network Modeling							●									●
Joule Heating Analysis							●									●
Thermo-Electric Cooler Modeling							●									●
Thermostat Modeling							●									●
Package Characterization							●									●
CABLE MODELING																
Finite Difference Time Domain Analysis									●							
Multi-Conductor Transmission Line Analysis	●	●	●	●	●	●	●		●						●	●
Two-Way Coupling FDTD and Transmission Line Solver							●		●							▲
Twisted Conductors							●		●							
Seam Impedance							●		●							
Cable Junctions							●		●							
Braided Shield Support		▲	▲				●		●							
Pin Voltage, Current Density, Plane Wave Excitations							●		●							
Multi-Conductor and Multi-Shield Support							●		●							●
Uses Discovery Modeler UI							●		●							
Thin Surface and Thin Wire Algorithms							●		●							
HPC FOR ELECTRONICS																
GPU Support	●	●	●				●								●	●
HPC Meshing, Multi-Domain, Multi-Technology		●	●	●	●	●									●	●
HPC Accelerated Frequency Sweeps	●	●	●												●	●
HPC Accelerated Broadband Fast Frequency Sweep		●	●												●	●
HPC Distributed Hybrid Solving		●	●												●	●
HPC Enabled Domain Decomposition Method	●	●	●												●	●
HPC Time Decomposition Method	●														●	●
HPC Enabled Multi-port Excitation Acceleration		●	●												●	●
HPC Acceleration for DCRL, ACRL and CG						●									●	●
HPC 2D Skew Parallel Processing	●														●	●
HPC Enabled Parallel Processing	●	●	●				●								●	●

/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	Siwave	Siwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	Nuhertz FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics Enterprise	
SYSTEM MODELING FOR POWER ELECTRONICS																	
Circuit Simulation	●	●	●	●	●	●	●								●	●	
Block Diagram Simulation	●	●	●	●	●	●	●								●	●	
State Machine Simulation	●	●	●	●	●	●	●								●	●	
VHDL-AMS Simulation	●	●	●	●	●	●	●								●	●	
Integrated Graphical Modeling Environment	●	●	●	●	●	●	●								●	●	
Power Electronics Component Libraries	●	●	●	●	●	●	●								●	●	
Reduced Order Modeling	●	●	●	●	●	●	●								●	●	
Power Electronic Device and Module Characterization	●	●	●	●	●	●	●								●	●	
Push-Back Excitation	●	●	●	●	●	●	●								●	●	
Co-Simulation with Low Frequency Electromagnetics	●														●	●	
Co-Simulation with MathWorks Simulink	●	●	●	●	●	●	●								●	●	
IC CAPABILITIES																	
Solve projects with encrypted tech files		●	●			●											●
RaptorX solver			●														
LDE - Layout Dependent Effects			●														
AI / ML CAPABILITIES																	
Siwave simulation runtime and memory prediction														●			
SynMatrix AI optimization														●			
SYSTEM MODELING FOR RF / MICROWAVE																	
Radio Frequency Interference (RFI) System Solver		●	●												●	●	
Electromagnetic Interference System Solver		●	●												●	●	
RF Link Budget Analysis		●	●												●	●	
RF Co-Site and Antenna Coexistence Analysis		●	●												●	●	
Automated Diagnostics for Rapid Root-Cause Analysis		●	●												●	●	
RF Component Library		●	●												●	●	
SYSTEM MODELING FOR SI / PI																	
SerDes Channel Modeling - IBIS-AMI, QuickEye and VerifEye			●		●												●
Multi-Drop & Parallel Bus Modeling - IBIS, HSPICE, Spectre, PSPICE, and Nexxim Transient		●	●	●	●												●

/ ELECTRONICS	Maxwell	HFSS	HFSS-IC	Siwave	Siwave Plus	Q3D Extractor	Icepak	Motor-CAD	EMC Plus	Charge Plus	Nuhertz FilterSolutions	SynMatrix Filter	SynMatrix Filter AI+	Electronics AI+	Electronics Pro	Electronics Enterprise
SYSTEM MODELING FOR SI / PI																
Network Data Exploration	●	●	●	●	●											●
TDR analysis		●	●	●	●											●
Steady State AC (LNA) Analysis		●	●	●	●											●
MULTIPHYSICS-PLATFORM TECHNOLOGIES																
Advanced, Automated Data Exchange	●	●	●	●	●	●	●								●	●
Drag-n-Drop Multiphysics	■	■	■	■	■	■	■								■	●
Direct Coupling Between Physics	●	●	●	●	●	●	●								●	●
Collaborative Workflows	●	●	●	●	●	●	●								●	●
Fully Managed Co-Simulation	●	●	●	●	●	●	●								●	●
Flexible Solver Coupling Options	●	●	●	●	●	●	●								●	●
MULTIPHYSICS ELECTRO-THERMAL INTERACTION																
Convection Cooled Electronics	■	■	■	■	■	■	■									●
Conduction Cooled Electronics	■	■	■	■	■	■	■									●
High Frequency Thermal Management		■	■				■									●
Low Frequency Thermal Management	■						■									●
MATERIALS FOR ELECTRONICS																
Granta Materials Data for Simulation	■	■	■	■	■	■	■	■							■	■
Granta MI Materials Gateway	■	■	■	■	■	■	■	■							■	
Ansys Granta Advanced Materials – Electromagnetic	■	■	■	■	■	■	■	▲								■
MISCELLANEOUS																
Integrated Windows HPC Support	●	●	●	●	●	●	●									
Integrated IBM Spectrum LSF Support	●	●	●	●	●	●	●									
Customizable 3rd Party Scheduler Support	●	●	●	●	●	●	●									
Support ACT Extensions	▲	▲	▲			▲	▲									▲
Parallel Solving with Ansys Cloud Launched from Desktop	●	●	●	●	●	●	●									
Elastic Licensing	●	●	●	●	●	●	●	●								
CHARGING AND DISCHARGING MODELING																
Internal Charging										●						
Electrostatic Discharge in Air										●						
Surface Charging										●						
3D Particle Transport										●						
Arcing in Solid Dielectrics										●						
Coupled Charging Simulations										●						
CERTIFICATION AND COMPLIANCE																
ISO 26262	●	●				●									●	

● Full Support ▲ Limited Capability ■ Requires more than 1 product

/ PHOTONICS	Lumerical FDTD			Lumerical MODE			Lumerical Multiphysics					Lumerical CML Compiler	Lumerical INTERCONNECT			Lumerical Enterprise
	FDTD	STACK	RCWA	varFDTD	EME	FDE	CHARGE	HEAT	DGTD	FEEM	MQW		INTERCONNECT	qINTERCONNECT	VERILOG-A PLATFORM	
PHOTONIC SIMULATION																
Finite Difference Time Domain (FDTD) solver	●														●	
Rigorous Coupled Wave Analysis (RCWA) solver			●												●	
Parameter Sweeps	●	▲	●	●	▲	▲	●	●	●	●	●		●		●	
Advanced Finite Difference Conformal Meshing	●		▲	●	●	●									●	
Multilayer Thin-Film Analysis	●	●	●												●	
Plane-Wave and Dipole Illumination	●	●	▲	●					▲						●	
Capture Interference and Microcavity Effects	●	●	●	●					●						●	
Power and Phase Evaluation in Diffraction Gratings	●		●						●						●	
Material Anisotropy support	●	▲	▲	●	●	●									●	
Far-Field Projection	●	▲	●	●	▲	●			●	●					●	
Bidirectional Scattering Distribution Function (BSDF) generation	●														●	
Band Structure Analysis	●														●	
Q-Factor Analysis	●								●						●	
Charge Generation Rate	●								●			●			●	
PHOTONIC WAVEGUIDE AND COUPLER DESIGN																
Finite Difference Eigenmode (FDE) solver	●					●									●	
Bidirectional Eigenmode Expansion (EME) solver					●										●	
2.5D variational FDTD (varFDTD) solver				●											●	
Bend Loss Analysis	●			▲	▲	●									●	
Overlap Modes Analysis						●			●	●					●	
Mode Area Analysis						●									●	
Helical Waveguides					▲	●									●	
PHOTONIC MULTI-PHYSICS DEVICE-LEVEL SIMULATION																
Discontinuous Galerkin Time Domain (DGTD) solver									●						●	
Waveguide Bend Calculation for Bend Loss and Ring Analysis										●					●	
Charge transport (electrostatic potential and drift diffusion)							●								●	
Self-Consistent Charge/Heat Modeling							●	●							●	

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/ PHOTONICS	Lumerical FDTD			Lumerical MODE			Lumerical Multiphysics					Lumerical CML Compiler	Lumerical INTERCONNECT			Lumerical Enterprise
	FDTD	STACK	RCWA	varFDTD	EME	FDE	CHARGE	HEAT	DGTD	FEEM	MQW		INTERCONNECT	qINTERCONNECT	VERILOG-A PLATFORM	
PHOTONIC MULTI-PHYSICS DEVICE-LEVEL SIMULATION																
Heat Transport (Heat Flux, Convection, and Radiation)								●							●	
Small-Signal Analysis							●								●	
Steady-State and Transient Analysis							●	●							●	
Automatic Mesh Refinement on Geometry, Materials, Doping, and Optical or Heat Generation							●	●							●	
Multiple Quantum Well (MQW) Band Structure Calculations (4x4, 6x6, 8x8 k.p method)											●				●	
MQW Gain, Spontaneous Emission, and Optical Index Calculation											●				●	
MQW Temperature, Strain, and Electric Field Effects											●				●	
Direct and Variational Method for MQW Excitons											●				●	
Multiphysics Solver Interoperability	●			▲	▲	●	●	●	●	●	●				●	
Avalanche Triggering Probability and Dark Count Rate for SPAD							●								●	
Graded Alloys for Opto-Electronic uLEDs (e.g. layer intermixing effects)							●								●	
Spontaneous and Strain-Induced Polarization Effects for Opto-Electronic uLEDs							●								●	
Quantum Confined Stark Effect for Electro-Absorption Modulators							●				●				●	
QUANTUM PHOTONICS SIMULATION																
Quantum Photonic Circuit Simulation (state transformation including loss)														●	●	
Measurement Operations with Flat Detectors														●	●	
Unitary Operator Circuit Generation														●	●	
Non-Classical Photon Source Models (SPDC and SFWM)														●	●	
Continuous-Variable Quantum Key Distribution (CV-QKD)														●	●	
PHOTONIC INTEGRATED CIRCUIT (PIC) SYSTEM-LEVEL SIMULATION																
Hierarchical Schematic Editor													●	●	■	●
Circuit Frequency Domain Analysis													●	●	■	●
Circuit Transient Sample Mode Simulator													●		■	●
Circuit Transient Block Mode Simulator													●			●
Circuit Multi-Mode and Multi-Channel Support													●	●	■	●

/ PHOTONICS	Lumerical FDTD			Lumerical MODE			Lumerical Multiphysics					Lumerical CML Compiler	Lumerical INTERCONNECT			Lumerical Enterprise
	FDTD	STACK	RCWA	varFDTD	EME	FDE	CHARGE	HEAT	DGTD	FEEM	MQW		INTERCONNECT	qINTERCONNECT	VERILOG-A PLATFORM	
PHOTONIC INTEGRATED CIRCUIT (PIC) SYSTEM-LEVEL SIMULATION																
Circuit Mixed Signal Representation													●		■	●
Integrated Laser TWLM solver													●			●
System Library including Optical Fibre, FEC and MLSE models											●		●			●
PIC Element Library													●		■	●
Nonlinear Waveguide Modeling													●			●
Statistical support (Monte Carlo Analysis)	●			●	●	●	●	●	●	●			●		■	●
Statistical support (Corner analysis)													●		■	●
Laser Self-Heating											●		●			●
Frequency Noise Spectrum Analyzer model													●			●
Avalanche Photodiode model													●		■	●
ELECTRONIC-PHOTONIC DESIGN AUTOMATION (EPDA) INTEROPERABILITY																
CML (Compact Model Libraries) Compiler Graphical User Interface (GUI)													●			●
Supports CML development and distribution													●	●		●
Automated CML generation													●			●
Version controlled CMLs													●	●		●
Structured input with template and data validation													●			●
Automated Test Case generation													●			●
CML Encryption (IP protection)													●	●		●
Leverage Build-in Analysis from 3rd party EDA tools															■	●
Design and Model using Verilog-A in 3rd party EDA tools															■	●
Circuit Electronic Photonic co-simulation (3rd party tools)													●		■	●
Process Enabled Photonic Component Design Workflows	●	●	●	●	●	●	●	●	●	●	●					●
Klayout Direct Bridge integration for component design	●	●	●	●	●	●	■	■	■	■	■					●
GDSFactory - Lumerical INTERCONNECT Schematic Driven Layout Flow														■		●
Lumerical Multiphysics Suite & Cadence Virtuoso Layout direct bridge integration	●	●	●	●	●	●	●	●	●	●	●					●
Luceda IPKISS Interoperability	●			●	●	●										●
Siemens EDA Tanner Interoperability													●			●

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/ PHOTONICS	Lumerical FDTD			Lumerical MODE			Lumerical Multiphysics					Lumerical CML Compiler	Lumerical INTERCONNECT			Lumerical Enterprise
	FDTD	STACK	RCWA	varFDTD	EME	FDE	CHARGE	HEAT	DGTD	FEEM	MQW		INTERCONNECT	qINTERCONNECT	VERILOG-A PLATFORM	
HPC, GPU AND CLOUD PERFORMANCE																
Single-Node GPU Acceleration	●														●	
Single-Node Multi-GPU Extended Memory Capacity	●														●	
HPC-ready / compatible with cloud providers	●			●	●	●									●	
Slurm scheduler in on-premise/cloud cluster	●														●	
Ansys Lumerical for Ansys Cloud	●	●	●	●	●	●	●	●	●	●	●		●	●	●	
Ansys Lumerical for Ansys Access on Microsoft Azure	●	●	●	●	●	●	●	●	●	●	●	●			●	
Ansys Lumerical for Ansys Gateway	●	●	●	●	●	●	●	●	●	●	●		●	●	●	
MATERIALS & RELATED TOOLS																
Comprehensive Material Models (optical, electronic, and thermal properties)	●	●	●	●	●	●	●	●	●	●	●				●	
Multi-Coefficient Models for Optical Dispersive Materials	●			●	●	●			●						●	
Non-linearity Modeling	●			●	▲	▲	●			▲					●	
Anisotropy Modeling	●	●		▲	▲	●	▲			▲					●	
Nitride Models and Materials for Green and Blue uLEDs							●				●				●	
AUTOMATION APPLICATION PROGRAMMING INTERFACE (API)																
Headless solver	●		●	●			●	●	●	●	●		●		●	
Lumerical Scripting Language	●	●	●	●	●	●	●	●	●	●	●		●		●	
Python API	●	●	●	●	●	●	●	●	●	●	●		●		●	
Remote Python API	●	●	●	●	●	●	●	●	●	●	●		●		●	
MATLAB Interoperability	■	■	■	■	■	■	■	■	■	■	■		■		●	
OPTIMIZATION																
Photonic Inverse Design with lumopt	●			●											●	
Particle Swarm	●		●	●	▲	▲	●	●	●	●	▲		●		●	

/ PHOTONICS	Lumerical FDTD			Lumerical MODE			Lumerical Multiphysics					Lumerical CML Compiler	Lumerical INTERCONNECT			Lumerical Enterprise
	FDTD	STACK	RCWA	varFDTD	EME	FDE	CHARGE	HEAT	DGTD	FEEM	MQW		INTERCONNECT	qINTERCONNECT	VERILOG-A PLATFORM	
ANSYS TOOLS INTEROPERABILITY																
Ansys Optics Launcher	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Lumerical connectors in Ansys OptiSlang	■	■	■	■	■	■	■	■	■	■	■				■	
Ansys Zemax Beam File (ZBF) Import Source/Export Source	●				●	●									●	
Lumerical Sub-Wavelength Model (LSWM) plugin (Static Data Exchange) for Ansys Speos	●		●												●	
Lumerical Sub-Wavelength Model (LSWM) plugin (Dynamic Data Exchange) for Ansys Zemax			■												●	
Optics workflows with Speos and/or Zemax (AR/VR, emitting sources, sensors)	●	●	●												●	
Ansys Zemax OpticStudio - Ansys Lumerical Co-Packaged Optics IO Grating and Edge coupler	●				●	●									●	
Large-Scale Metalens Workflow with Zemax OpticStudio			■												●	
Camera CMOS Image Sensor Workflow with Zemax OpticStudio and Speos	●		●												●	
DESIGN ENVIRONMENT																
Finite Difference IDE (with 2D/3D modeling)	●	●	●	●	●	●									●	
Finite Element IDE (with 2D/3D modeling)							●	●	●	●	●				●	
Layer Builder	●		●	●	●	●	●	●	●	●	●				●	
Import STL	●		●	●	●	●	●	●	●	●	●				●	
Import GDSII	●		●	●	●	●	●	●	●	●	●				●	
Import STEP	▲		▲	▲	▲	▲	●	●	●	●	●				●	
High DPI, 4k screen support	●	●	●	●	●	●	●	●	●	●	●	●	●		●	
Ansys Dark and Light themes for Lumerical	●	●	●	●	●	●	●	●	●	●	●		●		●	
Assembly Group	●		●												●	

/ DESIGN TOOLS	SpaceClaim	DesignModeler	Discovery
FLUIDS			
Transient Flow			●
Incompressible Flow			●
Compressible Flow			▲
Porous Media			●
Rotating Fluid Zone			●
Intake and Exhaust Fans			●
GEOMETRY			
Direct Modeling Technology	●		●
Feature Based Modeling Technology	●	●	●
Open Data from All Major CAD Systems	●	●	●
Modify Imported Geometry	●	●	●
Defeaturing and Simplification Tools	●	●	●
Model Repair	●	●	●
Add Parameters for Design Exploration	●	●	●
Extract Mid-Surfaces/Shells and Beams	●	●	●
Extract Fluid Volumes	●	●	●
Shared Topology for Conformal Meshing	●	●	●
Boundary Condition Mapping	●	●	●
Reverse Engineering Faceted Data	●		●
Prep for Additive Manufacturing	●		●
Subdivisional Modeling			●
HEAT TRANSFER			
Steady-state Solid Conduction			●
Transient Solid Conduction			●
Natural Convection			●
Conjugate Heat Transfer			●
Internal and External Radiation			●

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Aqwa = Aqwa

/ DESIGN TOOLS	SpaceClaim	DesignModeler	Discovery							
GRANTA MATERIALS DATA FOR SIMULATION										
Materials Data for Simulation			■							
MULTIPHYSICS										
Conjugate Heat Transfer			●							
Thermal-Stress			●							
STRUCTURAL										
Static Structural Analysis			●							
Modal Analysis			●							
Pre-Stressed Modal Analysis			●							
Point Masses			●							
Springs			●							
Joints			●							
Nonlinear Contact			▲							
Pre-Tension Bolts			●							
Large Deformation			■							
Topology Optimization			●							
TOOL INTEROPERABILITY										
Supported running on the Ansys Cloud Direct In browser interactively	●	●	●							
Geometry Transfer to Workbench (WB), Fluent, and Mechanical	●	●	●							
Physics Transfer to Fluent, Mechanical, and HFSS			●							
HIGH FREQUENCY ELECTROMAGNETICS										
Automated Antenna Simulation Workflow			●							
FDTD Solution with Automated Graded Cartesian Grid			●							
Circuit Port Excitations			●							
Mode Port Excitations			●							
Electric and Magnetic Material Properties			●							
S Parameters Including Smith Charts and Touchstone Export			●							
Electric and Magnetic Field Results			●							
Antenna Parameter Calculation			●							

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/ DIGITAL MISSION ENGINEERING	STK Free	STK Pro	STK Premium (Space)	STK Premium (Air)	STK Enterprise	STK Scheduler	STK Solis	STK Missile Tool Kit	PropNav	ODTK	ODTK SSA
MODELING CAPABILITIES											
Physics-based object modeling	●	●	●	●	●					●	
Full 3D and 2D visualization	●	●	●	●	●						
Streaming imagery	●	●	●	●	●						
Integrated timeline view	●	●	●	●	●						
Reporting and graphing	▲	●	●	●	●					●	
Moviemaking	●	●	●	●	●						
Geometric sensor models (rectangular, complex conic, SAR, etc.)	▲	●	●	●	●						
Platform attitude profiles (aligned, ECF, ECI, fixed in axes, external-file, etc.)	▲	●	●	●	●						
System constraints (azimuth, elevation, range, line of sight, temporal, lighting, etc.)	▲	●	●	●	●						
Single object access calculations	●	●	●	●	●						
Many vs. many, multinode access computations		●	●	●	●						
Body masking		●	●	●	●						
Sensor obscuration tool		●	●	●	●						
Import digital terrain data		●	●	●	●						
Terrain-based analysis and route following		●	●	●	●						
RF communications system modeling		●	●	●	●						
Radar system modeling		●	●	●	●						
Urban environment signal attenuation		●	●	●	●						
User-defined coverage grids for data visualization		●	●	●	●						
Advanced orbit trajectory design		▲	●	▲	●						
Test and evaluation planning and results analysis		▲	▲	▲	●						
Parallel computing		▲	●	●	●						
Missile and launch vehicle modeling		●	●	●	●			■ ¹			
Real-time tracking data feeds			●	●	●						
DIS and HLA interfaces			●	●	●						

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MODELING CAPABILITIES											
Electro-optical and infrared sensor modeling			●	●	●	●					
Model advanced space environment effects			●		●	●					
Consider spacecraft perturbation effects (e.g., solar radiation pressure drag)			●		●	●					
Spacecraft rendezvous and proximity operation maneuver planning templates			●		●	●					
Solar panel power estimation tool			●	●	●	●					
Performance-based aircraft route design				●	●	●					
Wind effects on airborne vehicle trajectories				●	●	●					
Runway and waypoint catalogs				●	●	●					
Correlate external ephemeris to known platform performance envelopes					●	●					
Integrate analysis with SysML state machine simulations						●					
Resource and asset scheduling in STK-modeled missions							■ ¹				
Dynamic spacecraft attitude system modeling								■ ¹			
Emulate onboard spacecraft attitude flight control systems								■ ¹			
Design attitude system P-I-D controls								■ ¹			
Model onboard spacecraft reaction wheels and gyros								■ ¹			
Advance multi-stage missile system modeling									■ ¹		
Proportional navigation and guidance simulation										■ ¹	
SIMULATE & PROCESS SATELLITE / SPACECRAFT TRACKING DATA											
Process spacecraft tracking and measurement data										●	
Resolve spacecraft maneuvers from tracking measurements										●	
Multiple simultaneous orbit solutions										●	
Combine multisource satellite tracking data										●	
Collection of common automation routines for on-orbit operations										■	
Object association and correlation against existing catalog										■ ¹	●
Automated maneuver processing, characterization, and refined orbit estimations											●

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APP DEVELOPMENT API'S											
Software development kit APIs for workflow automation & scripting		●	●	●	●	●	●	●	●	●	
Deployment of custom applications developed using STK's API's											
Scalable .DLL's for building custom stand-alone or server-based applications and services											

/ CLOUD	Ansys Cloud Direct	BYOC Marketplace	
		Ansys Gateway Powered by AWS	Ansys Access on Microsoft Azure
VDI SUPPORT			
Windows (RDP)	●	●	●
Linux		●	●
In-browser	●		
HPC SUPPORT			
HPC Support	●	●	
Autoscaling Cluster			●
CLOUD HARDWARE PROVIDER			
Ansys Managed	●		
Bring Your Own Cloud		●	●
STORAGE			
Object Storage	●		
Volume Storage		●	●
Shared SMB and NFS Storage		●	●
LICENSING			
Bring Your Own License	●	●	●
Elastic Licensing	●	●	●
AUTHENTICATION			
Ansys ID/SSO	●	●	●
Active Directory Integration		●	
WEB PORTAL			
Access Controls		●	●
Template Creation		●	●
Budget Control	●	●	●
Usage Reporting	●	●	●
3RD PARTY TOOLS			
3rd Party Tools		●	●

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