
ANSYS®
CAPABILITIES
2020 R1

CONTENT

STRUCTURES

Geometric Idealization 3
Modeling Capabilities 4
Materials 4
Composite Materials 5
Structural Solver Capabilities 5
Topology Optimization 6
Multi Analysis 7
Vibrations 7
Nonlinear Transient Dynamics 8
Explicit Dynamics 8
Durability 9
Wave Hydrodynamics 9
Thermal 10
Additional Physics 10
Optimization 11
Miscellaneous and Usability 11
HPC - Structures 12

FLUIDS

General Solver Capabilities 13
Single Phase Non-Reacting Flows 14
Heat Transfer 14
Particles Flows (Multiphase) 15
Free Surface Flows (Multiphase) 15
Dispersed Multiphase Flows (Multiphase) 16
Reacting Flows 17
Turbomachinery 18
In-Flight Icing 18
Optimization 19
High Rheology Material 20
HPC - Fluids 20
Pre and Post Processing 21
Multiphysics 21
Fluid-Structure Interacton 21
Electro-Thermal Interaction 21
Other Coupled Interactions 22
Ease of Use and Productivity 22

ELECTRONICS

Low Frequency Electromagnetics 23
Magnetic Transient 23
Advanced Magnetic Modeling 23
Concept Design Solution for Electrical Machine 24
High Frequency Electromagnetics 25
Power and Signal Integrity Board Simulation Capabilities 28
RLCG Parasitic Extraction 29
Electronics Cooling 30
HPC for Electronics 31

SYSTEMS MODELING - ELECTRONIC PRODUCTS

System Modeling for Power Electronics 31
System Modeling for RF/Microwave 32
System Modeling for SI/PI 32

MULTIPHYSICS

Platform Technologies 32
Electro-Thermal Interaction 33
Miscellaneous 33

SYSTEMS & EMBEDDED SOFTWARE

System Simulation, Validation and Digital Twins 34
Functional Safety Analysis 34
Cybersecurity Analysis 34
Model-based Systems Engineering 35
Embedded Control Software 36
Man-Machine Interface Software 36
AV Perception Software Testing 37

VRXPERIENCE

Human Vision 37
Headlamp Simulation 38
System Simulation 38
Context Simulation 38
Rendering Engine 39
VR 39
Solver 39
Acoustics & Sound Quality 39

GEOMETRY 40

DESIGN TOOLS

Structural 41
Fluid 41
Thermal 42
Electromagnetics 42
Multiphysics 42
Design & Concept Modeling 43
Manufacturing 43
3D Printing 43
Reverse Engineering 43
Interfaces and Add-Ons 43

ADDITIVE SOLUTIONS

Additive Prep 44
Topology and Lattice Optimization 44
Geometry and STL File Handling 45
Workbench Additive 45
Additive Print 46
Additive Science 47

OPTICAL

Ansys Products Embedded 48
General Solver Capabilities 48
Photometry 48
Human Vision 49
Wavelength Range 49
Optical Design 49
Optical Sensors 50
Head-Up Display 50
HPC - SPEOS 50
Simulation Preparation 51
Post Processing 51
Optimization 52

OPTICAL MEASUREMENT DEVICE

Included 53
Measurement Capability 53
Use Cases 54
Post Processing 54

MATERIALS

Materials Data Management 55
Materials Data Analysis 56
Workflow Management 56
Integration with CAD, CAE, PLM 56
Restricted Substances 57
Materials Selection & Related Tools 57
Data Library for Industry 58
Teaching Resources 59

STRUCTURES	MECHANICAL ENTERPRISE	MECHANICAL PREMIUM	MECHANICAL PRO	AUTODYN	LS-DYNA
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	●	●		●	●
Coupled Field ROM Element Technology	●				
Substructuring / Matrix	●				

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

DMP = Distributed-memory parallel
SMP = Shared-memory parallel
MAPDL = Mechanical APDL
Explicit = Autodyn
RBD = Rigid Body Dynamics
Aqwa = Aqwa

STRUCTURES	MECHANICAL ENTERPRISE	MECHANICAL PREMIUM	MECHANICAL PRO	AUTODYN	LS-DYNA
MODELING CAPABILITIES					
Contact - Linear	●	●	●	●	●
Contact - Nonlinear	●	●	●	●	●
Joints	●	●	●	●	●
Spot Welds	●	●	●	●	●
Element Birth and Death	●	●			
Gasket Elements	●				
Rezoning and Adaptive Remeshing	●			●	●
Inverse Analysis	●				
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 and Crack Growth	●				
Material Designer	●				
GRANTA Materials Data for Simulation	■[7]	■[7]	■[7]		

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

DMP = Distributed-memory parallel
SMP = Shared-memory parallel
MAPDL = Mechanical APDL
Explicit = Autodyn
RBD = Rigid Body Dynamics
Aqwa = Aqwa

STRUCTURES	MECHANICAL ENTERPRISE	MECHANICAL PREMIUM	MECHANICAL PRO	AUTODYN	LS-DYNA
COMPOSITE MATERIALS					
Material Definitions	●	●		●	●
Layers Definitions	●	▲		●	●
Interface Plies	●				
Advanced Modeling Features	●				
Variable Material Data	●				
Solid Extrusion	●				
Lay-Up Mapping	●				
Draping	●				
Lay-Up Exchange Interfaces	●				
Advanced Failure Criteria Library	●				
First-Ply Failure	●	●			
Last-Ply failure	●				
Delamination	●			●	●
Composite Cure Simulation	■[9]				
STRUCTURAL SOLVER CAPABILITIES					
Linear Static	●	●	●		
Nonlinear Static	●	●	●		
Pre-Stress Effects, Linear Perturbation	●	●	●	▲	▲
Nonlinear Geometry	●	●	●	●	●

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

DMP = Distributed-memory parallel
SMP = Shared-memory parallel
MAPDL = Mechanical APDL
Explicit = Autodyn
RBD = Rigid Body Dynamics
Aqwa = Aqwa

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

STRUCTURES	MECHANICAL ENTERPRISE	MECHANICAL PREMIUM	MECHANICAL PRO	AUTODYN	LS-DYNA
STRUCTURAL SOLVER CAPABILITIES (CONTINUED)					
Buckling - Linear Eigenvalue	●	●	●		
Buckling - Nonlinear Post Buckling Behavior	●	●	●		●
Buckling - Nonlinear Post Buckling Behavior - Arc Length	●	●			
Steady State Analysis Applied to a Transient Condition	●				
Advanced Wave Loading	●				
TOPOLOGY OPTIMIZATION					
Structural Optimization	●	●	●		
Modal Optimization	●	●	●		
Thermal Loads	●	●	●		
Inertial Loads	●	●	●		
Optimized Design Validation	●	●	●		
Manufacturing Constraints	●	●	●		
Stress constraints	●	●	●		
Symmetry	●	●	●		
Lattice Optimization	■[8]				
Overhang/Additive Constraints	■[8]				

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

DMP = Distributed-memory parallel
SMP = Shared-memory parallel
MAPDL = Mechanical APDL
Explicit = Autodyn
RBD = Rigid Body Dynamics
Aqwa = Aqwa

STRUCTURES	MECHANICAL ENTERPRISE	MECHANICAL PREMIUM	MECHANICAL PRO	AUTODYN	LS-DYNA
MULTI ANALYSIS					
Submodeling	●	●	●		
Data Mapping	●	●	●		
Multiphysics Data 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	●	●			
Modal Acoustic	●				
Harmonic Acoustic	●				

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

DMP = Distributed-memory parallel
SMP = Shared-memory parallel
MAPDL = Mechanical APDL
Explicit = Autodyn
RBD = Rigid Body Dynamics
Aqwa = Aqwa

STRUCTURES	MECHANICAL ENTERPRISE	MECHANICAL PREMIUM	MECHANICAL PRO	AUTODYN	LS-DYNA
NONLINEAR TRANSIENT DYNAMICS					
Rigid Body Mechanisms	●	●			
Rigid Body Dynamics with CMS L 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				●	

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

DMP = Distributed-memory parallel
SMP = Shared-memory parallel
MAPDL = Mechanical APDL
Explicit = Autodyn
RBD = Rigid Body Dynamics
Aqwa = Aqwa

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

STRUCTURES	MECHANICAL ENTERPRISE	MECHANICAL PREMIUM	MECHANICAL PRO	AUTODYN	LS-DYNA
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	●				

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

DMP = Distributed-memory parallel
SMP = Shared-memory parallel
MAPDL = Mechanical APDL
Explicit = Autodyn
RBD = Rigid Body Dynamics
Aqwa = Aqwa

STRUCTURES	MECHANICAL ENTERPRISE	MECHANICAL PREMIUM	MECHANICAL PRO	AUTODYN	LS-DYNA
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	●				
Electro-Migration	●				

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

DMP = Distributed-memory parallel
SMP = Shared-memory parallel
MAPDL = Mechanical APDL
Explicit = Autodyn
RBD = Rigid Body Dynamics
Aqwa = Aqwa

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

STRUCTURES	MECHANICAL ENTERPRISE	MECHANICAL PREMIUM	MECHANICAL PRO	AUTODYN	LS-DYNA
ADDITIONAL PHYSICS (CONTINUED)					
Diffusion-Pore-Fluid	●				
Diffusion-Thermal Structural-Electric	●				
Structural-Thermal-Electric-Magnetic	●				
1-Way Fluid-Structure Interaction	■[2]	■[2]	■[2]		
2-Way Fluid-Structure Interaction	■[2]				
OPTIMIZATION					
DesignXplorer Included	●	●	●	■[3]	■[3]
Parameters	●	●	●	●	●
Design Point Studies	●	●	●	●	●
Correlation Analysis	●	●	●	●	
Design of Experiments	●	●	●	●	
Sensitivity Analysis	●	●	●	●	
Goal Driven Optimization	●	●	●	●	
Six Sigma Analysis	●	●	●	●	
MISCELLANEOUS AND USABILITY					
ANSYS SpaceClaim	●	■[4]	■[4]	■[4]	■[4]
ANSYS Customization Suite (ACS)	●	■[5]	■[5]	■[5]	■[5]
Support ACT Extensions	●	●	●	●	●
Command Snippet Support	●	●	●		

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

DMP = Distributed-memory parallel
SMP = Shared-memory parallel
MAPDL = Mechanical APDL
Explicit = Autodyn
RBD = Rigid Body Dynamics
Aqwa = Aqwa

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

STRUCTURES	MECHANICAL ENTERPRISE	MECHANICAL PREMIUM	MECHANICAL PRO	AUTODYN	LS-DYNA
MISCELLANEOUS AND USABILITY (CONTINUED)					
Batch run capability	●	●	●	●	●
Read/Write 3rd Party Matrix CAE Data	●	●		●	●
CDB and 3rd party FE Model Import	●	●	●		●
Nastran Bulk File Export	●	●	●		
HPC - STRUCTURES					
Default Number of Cores	4 (DMP + SMP) MAPDL 4 for Explicit 4 for RBD MAPDL 4 for AQWA	4 (DMP + SMP)	4 (DMP + SMP)	1	1
Parallel Solving on Local PC	●	●	●	●	●
Parallel Solving on Cluster	●	●	●	●	●
GPU Acceleration	MAPDL - ■6 Explicit - No RBD - No AQWA - No	■6	■6		
Parallel Solving with ANSYS Cloud Launched from Desktop	MAPDL - Yes Explicit - No RBD - No AQWA - No	MAPDL - Yes RBD - No	MAPDL - Yes		

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

DMP = Distributed-memory parallel
SMP = Shared-memory parallel
MAPDL = Mechanical APDL
Explicit = Autodyn
RBD = Rigid Body Dynamics
Aqwa = Aqwa

FLUIDS	CFD ENTERPRISE					CHEMKIN ENTERPRISE
	CFD PREMIUM		POLYFLOW	FORTE	FENSAP-ICE	
	FLUENT	CFX				
GENERAL SOLVER CAPABILITIES						
Comprehensive Inlet and Outlet Conditions	●	●	●	●	●	●
Steady-State Flow	●	●	●	●	●	●
Transient Flow	●	●	●	●	●	●
2-D and 3-D Flow	●	▲	●	▲	●	▲
Reduced Order Models (ROM)	●					●
Time Dependent Boundary Conditions	●	●	●	●	●	●
Customizable Materials Library	●	●	●	●	●	●
Fan Model	●	●			●	
Periodic Domains	●	●	●	●	●	●
Flow-Driven Solid Motion (6DOF)	●	●			●	
Pressure-Based Coupled Solver	●	●	●	●	●	●
Density-Based Coupled Solver	●	●				●
Dynamic/Moving-Deforming Mesh	●	●	●	●	●	●
Overset Mesh	●					
Immersed-Solid/MST Method for Moving Parts		●	●		●	
Automatic On-the-Fly Mesh Generation with Dynamic Refinement	●			●		●
Dynamic Solution-Adaptive Mesh Refinement	●	●		●	▲	●
Polyhedral Unstructured Solution-Adaptive Mesh Refinement	●					

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

FLUIDS	CFD ENTERPRISE					CHEMKIN ENTERPRISE
	CFD PREMIUM		POLYFLOW	FORTE	FENSAP-ICE	
	FLUENT	CFX				
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)	●	●	●			
Acoustics (Source Export)	●	●			●	
Acoustics (Noise Prediction)	●	▲				
HEAT TRANSFER						
Natural Convection	●	●			●	●
Conduction & Conjugate Heat Transfer	●	●			●	●
Shell Conduction (Including Multi-Layer Model)	●					
Internal Radiation - Participating Media	●	●	●		●	●
Internal Radiation - Transparent Media	●	●				●
External Radiation	●	●				●

FLUIDS	CFD ENTERPRISE					CHEMKIN ENTERPRISE
	CFD PREMIUM		POLYFLOW	FORTE	FENSAP-ICE	
	FLUENT	CFX				
HEAT TRANSFER (CONTINUED)						
Solar Radiation & Load	●	●				
Simplified Heat Exchanger Model	●					
Non-Equilibrium Thermal Model	●					
Prorous Media	●					
PARTICLES FLOWS (MULTIPHASE)						
Coupled Discrete Phase Modeling including Thin Wall Films	●	●		●	●	●
Macroscopic Particle Model	●					
Inert Particle Tracking (With Mass)	●	●				
Liquid Droplet (Incl. Evaporation)	●	●		●	●	●
Combusting Particles	●	●		●	●	●
Multicomponent Droplets	●	●		●	●	●
Discrete Element Model (DEM)	●	●				
Break-Up And Coalescence	●	●		●	●	●
Erosion	●	●				
FREE SURFACE FLOWS (MULTIPHASE)						
Implicit VOF	●	●	●			
Explicit VOF	●	●	●			
Coupled Level Set/VOF	●	●			●	
Complex Multiphase Regime Transitions (AIAD Model)	●					

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

FLUIDS	CFD ENTERPRISE					CHEMKIN ENTERPRISE
	CFD PREMIUM		POLYFLOW	FORTE	FENSAP-ICE	
	FLUENT	CFX				
FREE SURFACE FLOWS (MULTIPHASE) (CONTINUED)						
VOF to DPM Spray Model	●					
Open Channel Flow and Wave	●	●				
Surface Tension	●	●		●	●	
Phase Change	●	●		●	●	
Cavitation	●	●		●	●	
Cavitation Where Multiple Fluids and Non-Condensing Gases are Present	●					
DISPERSED MULTIPHASE FLOWS (MULTIPHASE)						
Mixture Fraction	●	●				
Eulerian Model including Thin Wall Films	●	●		●	●	
Boiling Model	●	●		●		●
Surface Tension	●	●		●		●
Phase Change	●	●		●	●	●
Drag And Lift	●	●		●	●	●
Wall Lubrication	●	●		●		●
Heat And Mass Transfer	●	●		●	●	●
Population Balance	●	●		●		●
Reactions Between Phases	●	●		●		●
Granular Model for Dense Bed of Solids	●	●				
Dense Particulate Coupling (DDPM)	●	●				

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

FLUIDS	CFD ENTERPRISE					CHEMKIN ENTERPRISE
	CFD PREMIUM		POLYFLOW	FORTE	FENSAP-ICE	
	FLUENT	CFX				
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	●			●		●
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	●					●

FLUIDS	CFD ENTERPRISE					CHEMKIN ENTERPRISE
	CFD PREMIUM		POLYFLOW	FORTE	FENSAP-ICE	
	FLUENT	CFX				
REACTING FLOWS (CONTINUED)						
Flamespeed and Ignition Table Generation						●
Reaction Sensitivity, Uncertainty and Path Analysis						●
Surrogate Blend Optimizer						●
Mechanism Reduction						●
Detailed Electrochemistry Model for Li-Ion Batteries	●					
TURBOMACHINERY						
MRF/Frozen-Rotor	●	●				
Sliding-Mesh/Stage	●	●				
Transient Blade Row		●				
Pitch Change		●				
Time Transformation		●				
Fourier Transformation		●				
Harmonic Analysis		●				
Blade Flutter Analysis		●				
Forced Response Analysis		●				
Flank Milled Blades		●				
Performance Maps		●				
IN-FLIGHT ICING						
Simulation of Standard Droplets, SLD, and Ice Crystals	●				●	
Inclusion of Vapor / Humidity Effects on Icing	●				●	

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

FLUIDS	CFD ENTERPRISE					CHEMKIN ENTERPRISE
	CFD PREMIUM		POLYFLOW	FORTE	FENSAP-ICE	
	FLUENT	CFX				
IN-FLIGHT ICING (CONTINUED)						
Icing Environments of Appendices C, O (SLD), and D (Ice Crystals)	●				●	
Various 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					●	
Icing of Rotating Components of All Types: Rotors, Propellers, and Engines (Fan, Guide Vanes, and Any Number of Compressor Rows)					▲	
OPTIMIZATION						
Parameters	●	●	●			●
Design Point Studies	●	●	●			●
Correlation Analysis	●	●	●			
Design of Experiments	●	●	●			
Sensitivity Analysis	●	●	●			●
Goal Driven Optimization	●	●	●			

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

FLUIDS	CFD ENTERPRISE					CHEMKIN ENTERPRISE
	CFD PREMIUM		POLYFLOW	FORTE	FENSAP-ICE	
	FLUENT	CFX				
OPTIMIZATION (CONTINUED)						
Six Sigma Analysis	●	●	●			
Adjoint Solver for Shape Optimization	●					
Adjoint Solver Supports Rotating Reference Frames & Conjugate Heat Transfer	●					
Multi-Objective-Constrained Optimization	●					
Mesh Morphing (RBF Morph)	■					
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	●	●	●	●	●	
Parallel Solving Over Cloud Launched from Desktop	●					
GPU Support	●		●			
Parallel mesh generation	●					

FLUIDS	CFD ENTERPRISE					CHEMKIN ENTERPRISE
	CFD PREMIUM		POLYFLOW	FORTE	FENSAP-ICE	
	FLUENT	CFX				
PRE AND POST PROCESSING						
Photo Realistic Rendering	●	●	●	●	●	●
SpaceClaim Direct Modeler	●	●	●	●	●	●
Compare Multiple Runs, Datasets, Physics, Graphs in a Single Window	●	●	●	●	●	●
MULTIPHYSICS						
Advanced, Automated Data Exchange	●	●	●		●	
Accurate Data Interpolation Between Dissimilar Meshes	●	●			●	
Drag-n-Drop Multiphysics	●	●	●			
Direct Coupling Between Physics	●	●				
Collaborative Workflows	●	●				
Fully Managed Co-Simulation	●	●				
Flexible Solver Coupling Options	●	●			●	
FLUID-STRUCTURE INTERACTION						
Force Induced Motion/ Deformation	■	■	●			
Fluid Thermal Deformation	■	■				
ELECTRO-THERMAL INTERACTION						
Convection Cooled Electronics	●	●				
Conduction Cooled Electronics	●	●				
High Frequency Thermal Management	●	●				
Electromechanical Thermal Management	●	●				

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

FLUIDS	CFD ENTERPRISE					CHEMKIN ENTERPRISE
	CFD PREMIUM		POLYFLOW	FORTE	FENSAP-ICE	
	FLUENT	CFX				
OTHER COUPLED INTERACTIONS						
Aero-Vibro Acoustics	●					
Acoustics-Structural	●	●				
Fluid Magnetohydrodynamics	●	●				
EASE OF USE AND PRODUCTIVITY						
Support ACT Simulation Apps	●					
Mosaic-Enabled Meshing Technology	●					
Task-Based Workflow - Watertight Geometries	●					
Task-Based Workflow - Fault Tolerant Geometries	●					
Directly Enter Expressions	●	●				
Parallel Solving with ANSYS Cloud Launched from Desktop	●					

ELECTRONICS	Electronics Premium MAXWELL	Electronics Premium HFSS	Electronics Premium SIWAVE	Electronics Premium Q3D EXTRACTOR	Electronics Premium ICEPAK	Motor-CAD	Electronics Pro 2D	Electronics Enterprise
LOW FREQUENCY ELECTROMAGNETICS								
Electrostatics	●						● (2D Only)	●
AC Conduction	●						● (2D Only)	●
DC Conduction	●						● (2D Only)	●
Magnetostatics	●						● (2D Only)	●
Adaptive Field Mesh	●	●	●	●			● (2D Only)	●
AC Harmonic Magnetic	●						● (2D Only)	●
Electric Transient	●						● (2D Only)	●
MAGNETIC TRANSIENT								
Translational Motion	●						● (2D Only)	●
Fully Automatic Symmetrical Mesh Generation	●						● (2D Only)	●
Rotational Motion	●						● (2D Only)	●
Non-Cylindrical Motion	●						● (2D Only)	●
Advanced Embedded Circuit Coupling	●						●	●
Circuit Coupling with Adaptive Time Stepping	●						●	●
Direct and Iterative Matrix Solvers	●						●	●
ADVANCED MAGNETIC MODELING								
Vector Hysteresis Modeling	●						●	●
Hysteresis Modeling for Anisotropic Material	●						●	●
Frequency Dependent Reduced Order Models	●						●	●

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

ELECTRONICS	Electronics Premium MAXWELL	Electronics Premium HFSS	Electronics Premium SIWAVE	Electronics Premium Q3D EXTRACTOR	Electronics Premium ICEPAK	Motor-CAD	Electronics Pro 2D	Electronics Enterprise
ADVANCED MAGNETIC MODELING (CONTINUED)								
Equivalent 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 De-Magnetization Modeling	●						●	●
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	●						●	●
Litz Wire Modeling	●						●	●
CONCEPT DESIGN SOLUTION FOR ELECTRICAL MACHINE								
Template-Based Magnetic Topologies						●		
Template-Based Cooling Topologies						●		
Magnetic 2D FEA with Analytical Solution						●		
Thermal 2D FEA with Analytical Solution						●		

ELECTRONICS	Electronics Premium MAXWELL	Electronics Premium HFSS	Electronics Premium SIWAVE	Electronics Premium Q3D EXTRACTOR	Electronics Premium ICEPAK	Motor-CAD	Electronics Pro 2D	Electronics Enterprise
CONCEPT DESIGN SOLUTION FOR ELECTRICAL MACHINE (CONTINUED)								
3D Thermal and Fluid Network						●		
Temperature Dependent Duty-Cycle Analysis						●		
Manufacturing Effects Due to Winding Impregnation and Housing Interfaces						●		
Linear Structural 2D FEA						●		
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		●						●
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 Obects		●						●

ELECTRONICS	Electronics Premium MAXWELL	Electronics Premium HFSS	Electronics Premium SIWAVE	Electronics Premium Q3D EXTRACTOR	Electronics Premium ICEPAK	Motor-CAD	Electronics Pro 2D	Electronics Enterprise
HIGH FREQUENCY ELECTROMAGNETICS (CONTINUED)								
Range Doppler Plots for Radar Scenario Analyses								●
Accelerated Doppler Processing (ADP) for SBR+ Range Doppler Analyses								●
Domain Decomposition Method (DDM) for Frequency Domain FEM Analysis		●						●
Hybrid Finite Element/ Integral Equation Analysis		●						●
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		●						●
Periodic Boundary		●						●

ELECTRONICS	Electronics Premium MAXWELL	Electronics Premium HFSS	Electronics Premium SIWAVE	Electronics Premium Q3D EXTRACTOR	Electronics Premium ICEPAK	Motor-CAD	Electronics Pro 2D	Electronics Enterprise
HIGH FREQUENCY ELECTROMAGNETICS (CONTINUED)								
Frequency Dependant 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		●						●
Radar Prep/Post Simulation Wizards		●						●
3D Component Libraries with User Controled Parametrics		●						●
3D Component with Encryption Creation		●						●

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

ELECTRONICS	Electronics Premium MAXWELL	Electronics Premium HFSS	Electronics Premium SIWAVE	Electronics Premium Q3D EXTRACTOR	Electronics Premium ICEPAK	Motor-CAD	Electronics Pro 2D	Electronics Enterprise
HIGH FREQUENCY ELECTROMAGNETICS (CONTINUED)								
3D Component with Encryption Utilization		●						●
Mutlipaction Solver		●						●
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)		●	●					●
Near-Field EMI Analysis			●					●
Far-Field EMI Analysis			●					●

ELECTRONICS	Electronics Premium MAXWELL	Electronics Premium HFSS	Electronics Premium SIWAVE	Electronics Premium Q3D EXTRACTOR	Electronics Premium ICEPAK	Motor-CAD	Electronics Pro 2D	Electronics Enterprise
POWER AND SIGNAL INTEGRITY BOARD SIMULATION CAPABILITIES (CONTINUED)								
Characteristic Impedance (Zo) L 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			●					●
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		●		●				●

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

ELECTRONICS	Electronics Premium MAXWELL	Electronics Premium HFSS	Electronics Premium SIWAVE	Electronics Premium Q3D EXTRACTOR	Electronics Premium ICEPAK	Motor-CAD	Electronics Pro 2D	Electronics Enterprise
RLCG PARASITIC EXTRACTION (CONTINUED)								
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					●			●

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

ELECTRONICS	Electronics Premium MAXWELL	Electronics Premium HFSS	Electronics Premium SIWAVE	Electronics Premium Q3D EXTRACTOR	Electronics Premium ICEPAK	Motor-CAD	Electronics Pro 2D	Electronics Enterprise
HPC FOR ELECTRONICS								
GPU Support	■	■						
HPC Accelerated Frequency Sweeps		●	●					
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 Enabled Parallel Processing	●	●		●	●			
SYSTEMS MODELING - ELECTRONICS PRODUCTS								
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	●	●	●	●	●		●	●
Co-Simulation with MathWorks Simulink	●	●	●	●	●		●	●

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

ELECTRONICS	Electronics Premium MAXWELL	Electronics Premium HFSS	Electronics Premium SIWAVE	Electronics Premium Q3D EXTRACTOR	Electronics Premium ICEPAK	Motor-CAD	Electronics Pro 2D	Electronics Enterprise
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		●					●	●
Wireless Propagation Models		●					●	●
Multi-Fidelity Parametric Radio Models		●					●	●
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		▲	●					●
Network Data Exploration	●	●	●	●				●
TDR analysis		●	●					●
Steady State AC (LNA) Analysis		●	●					●
Virtual Compliance - DDRx, GDDRx, & LPDDRx		●	●					●
MULTIPHYSICS								
PLATFORM TECHNOLOGIES								
Advanced, Automated Data Exchange	●	●	●	●	●			●

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

ELECTRONICS	Electronics Premium MAXWELL	Electronics Premium HFSS	Electronics Premium SIWAVE	Electronics Premium Q3D EXTRACTOR	Electronics Premium ICEPAK	Motor-CAD	Electronics Pro 2D	Electronics Enterprise
PLATFORM TECHNOLOGIES (CONTINUED)								
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	●			●	●			●
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	●	●	●	●	●			

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

SYSTEMS & EMBEDDED SOFTWARE	TWIN BUILDER	MEDINI ANALYZE	MEDINI ANALYZE FOR CYBERSECURITY	SCADE ARCHITECT	SCADE SUITE	SCADE DISPLAY	SCADE VISION	VRXPERIENCE FOR AV/ADAS	VRXEPERIENCE HMI	VRXEPERIENCE PERCEIVED QUALITY	VRXEPERIENCE SOUND
SYSTEM SIMULATION, VALIDATION AND DIGITAL TWINS											
Integrated Graphical Modeling Environment	●										
Standard Modeling Languages and Exchange Formats	●										
Multi-domain Systems Modeler	●										
Extensive 0D Application-Specific Libraries	●										
3rd Party (1D) Tool Integrations	●										
3D ROM	●										
Embedded Software Integration	●										
Multi-Domain System Simulation	●										
Rapid HMI Prototyping	●										
System Optimization	●										
XIL Integration	●										
IIoT Connectivity	●										
Digital Twin Runtime Deployment	●										
FUNCTIONAL SAFETY ANALYSIS											
Safety Concept Modelling		●									
Model Based Safety Analysis		●									
Reliability Prediction and Analysis		●									
Traceability and Validation Teamwork		●									
Integration into Engineering Environment		●									

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

SYSTEMS & EMBEDDED SOFTWARE	TWIN BUILDER	MEDINI ANALYZE	MEDINI ANALYZE FOR CYBERSECURITY	SCADE ARCHITECT	SCADE SUITE	SCADE DISPLAY	SCADE VISION	VRXPERIENCE FOR AV/ADAS	VRXPERIENCE HMI	VRXPERIENCE PERCEIVED QUALITY	VRXPERIENCE SOUND
FUNCTIONAL SAFETY ANALYSIS (CONTINUED)											
Customization and Process Adaption		●									
ANSYS Product Integration		●									
Reporting and Documentation		●									
CYBERSECURITY ANALYSIS											
Analysis Context Establishment and Asset Identification			●								
Threat Identification			●								
Attack Trees and Attack Collections			●								
Threat Assessment and Treatment			●								
Requirement Analysis and Management			●								
Rich Traceability			●								
Teamwork and Integrated Task Management			●								
Reporting and Customization			●								
MODEL-BASED SYSTEMS ENGINEERING											
Model-Based System Design				▲	▲						
Functional Decomposition				▲	▲						
Architecture Decomposition				●	●						
Allocation Of Functions To Components				●	●						
Model Checks				●	●						
Model Diff/Merge				●	●						
System / Software Bi-Directional Sync				●	●						
Model Sharing And IP Protection				●	●						

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

SYSTEMS & EMBEDDED SOFTWARE	TWIN BUILDER	MEDINI ANALYZE	MEDINI ANALYZE FOR CYBERSECURITY	SCADE ARCHITECT	SCADE SUITE	SCADE DISPLAY	SCADE VISION	VRXPERIENCE FOR AV/ADAS	VRXEPERIENCE HMI	VRXEPERIENCE PERCEIVED QUALITY	VRXEPERIENCE SOUND
MODEL-BASED SYSTEMS ENGINEERING (CONTINUED)											
Model-Based Interface Control Document Production				●	●						
Configurable For Industry Standards (IMA, AUTOSAR, Etc.)				●	●						
Product Configuration for Automotive Developers				●	●						
EMBEDDED CONTROL SOFTWARE											
Data Flow and State Machine Design and Simulation Capabilities					●						
Extensive Set of Libraries Delivered as Design Examples					●						
Simulation Capabilities					●						
Record and Playback Scenarios					●						
Plant Model Co-Simulation Including FMI					●						
Coverage Analysis for Requirements Based Tests					●						
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					●						

SYSTEMS & EMBEDDED SOFTWARE	TWIN BUILDER	MEDINI ANALYZE	MEDINI ANALYZE FOR CYBERSECURITY	SCADE ARCHITECT	SCADE SUITE	SCADE DISPLAY	SCADE VISION	VRXPERIENCE FOR AV/ADAS	VRXEPERIENCE HMI	VRXEPERIENCE PERCEIVED QUALITY	VRXEPERIENCE SOUND
MAN-MADE INTERFACE SOFTWARE											
Model-Based Prototyping And Specification Of MMIs						●					
Support Of OpenGL, OpenGL SC and OpenGL ES						●					
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						●					
AV PERCEPTION SOFTWARE TESTING											
AV Perception Software Robustness Testing							●				
Triggering Events Identification							●				
Automatic Safety Report Generation							●				
VRXPERIENCE											
HUMAN VISION											
Glare Simulation								●			

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

SYSTEMS & EMBEDDED SOFTWARE	TWIN BUILDER	MEDINI ANALYZE	MEDINI ANALYZE FOR CYBERSECURITY	SCADE ARCHITECT	SCADE SUITE	SCADE DISPLAY	SCADE VISION	VRXPERIENCE FOR AV/ADAS	VRXEPERIENCE HMI	VRXEPERIENCE PERCEIVED QUALITY	VRXEPERIENCE SOUND
HEADLAMP SIMULATION											
Virtual Measurement								●			
Lamp Control								●	▲	▲	
IIHS Test								●			
SYSTEM SIMULATION											
Ground-Truth Sensor								●			
Camera Sensor								●	▲	▲	
LiDAR Sensor								●			
Radar Sensor								●			
Virtual Display Prototype									●		
Display software in the Loop (SCADE)									●		
HUD									●	●	
Advanced Lighting Component										●	
CONTEXT SIMULATION											
Basic Driving Scenario								●	▲	▲	
Advanced Driving Scenario								■	■		
Advanced Vehicle Dynamic								■	■		
Environement Creation								■	●	●	
Trigger & Animation									●	●	
MiL/SiL Connectivity								●	●		
HiL Connectivity								●			
Virtual Display & Actuators Interaction									●		

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

SYSTEMS & EMBEDDED SOFTWARE	TWIN BUILDER	MEDINI ANALYZE	MEDINI ANALYZE FOR CYBERSECURITY	SCADE ARCHITECT	SCADE SUITE	SCADE DISPLAY	SCADE VISION	VRXPERIENCE FOR AV/ADAS	VRXEPERIENCE HMI	VRXEPERIENCE PERCEIVED QUALITY	VRXEPERIENCE SOUND
VRXPERIENCE (CONTINUED)											
RENDERING ENGINE											
Real-Time Physics-Based Lighting								●	●	●	
Advanced Raytraced Lighting									●	●	
Full Physics GPU Lighting										●	
VR											
HMD									●	●	
CAVE, Powerwall									●	●	
Finger Tracking									●		
SOLVER											
Tolerance Variation Engine										●	
ACOUSTICS & SOUND QUALITY											
Analyze, Listen & Modify											●
Psychoacoustics, Automatic Detection and Separation, Play 3D Sound											●
Engine Sound Design											●
3D Sound for Listening Room and VR											●
Interactive Sound for Driving Simulator											●
Measure Sound Perception with Listening Test											●
Listen to ANSYS Mechanical Simulation											●

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

GEOMETRY	DESIGN MODELER	SPACECLAIM DESIGN MODELER
Direct Modeling Technology		●
Feature Based Modeling Technology	●	
Open Data from All Major CAD Systems	●	●
Export Data to Neutral File Formats	●	●
Modify Imported Geometry	●	●
Defeaturing and Simplification Tools	●	●
Model Repair	●	●
Add Parameters for Design Exploration	●	●
Extract Mid-Surfaces/Shells and Beams	●	●
Extract Volumes & Create Inner Fluid Domains	●	●
Extract Outer Air Enclosures	●	●
Shared Topology for Conformal Meshing	●	●
Booleans and Slicing	●	●
Create Weld Bodies	●	●
Boundary Condition Mapping	●	●
Scripting	●	●
Sketching and Editing Tools	●	●
3D Comparison Tools		●
Repair and Edit Faceted Data		●
Icepak Integration	●	●
Reverse Engineering Faceted Data		●

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

DESIGN TOOLS	DISCOVERY ESSENTIALS	DISCOVERY STANDARD	DISCOVERY ULTIMATE
STRUCTURAL			
Static Structural Analysis		●	●
Modal Analysis		●	●
Pre-Stressed Modal Analysis			●
Random Vibration			●
Linear Eigenvalue Buckling			●
Beams, Shells, Springs, Point Masses, Spars			●
Spatially Varying Loads			●
Nonlinear Contact & Joints			●
Pre-Tension Bolts & Multi-Step Analsysis			●
Basic Plasticity			●
Large Deformation			●
Fatigue Analysis			●
Topology Optimization		●	●
Linear Buckling			●
FLUID			
Steady-State Flow		■	●
Transient Flow		●	●
Time-dependent Fluid Conditions		●	●
Incompressible Flow[1]		●	●
Compressible Flow[1]			●
Non-Newtonian Fluids			●
Periodic Domains			●
Porous Media			●
Particle Flow			●

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

DESIGN TOOLS	DISCOVERY ESSENTIALS	DISCOVERY STANDARD	DISCOVERY ULTIMATE
THERMAL			
Steady State Thermal		●	●
Transient Thermal		●	●
Time Dependent Thermal Conditions		●	●
Conduction		●	●
Convection		●	●
Radiation to Space			●
ELECTROMAGNETICS			
DC Conduction		●	●
AC Conduction			●
Electrostatics			●
Magnetostatics			●
AC Harmonic Magnetics			●
MULTIPHYSICS			
Thermal-Stress		●	●
Fluid-Structure Interaction			●
Fluid-Solid Thermal (Conjugate Heat Transfer)			●
Thermal-Electric		●	●
Thermal-Electric-Stress		●	●
Thermal-Electromagnetic			●
Thermal-Electromagnetic-Stress			●

DESIGN TOOLS	DISCOVERY ESSENTIALS	DISCOVERY STANDARD	DISCOVERY ULTIMATE
DESIGN & CONCEPT MODELING			
Concept Modeling or Detail Design	●	●	●
Part/Assembly Creation or Import	●	●	●
Large Assembly Importing	●	●	●
2-D Drawings, BOM, Exploded Views	●	●	●
Geometric Parameterization	●	●	●
Sheet Metal Design	●	●	●
MANUFACTURING			
Repair & Defeature Tools	●	●	●
Sheet Metal Editing and Unfolding	●	●	●
3D PRINTING[2]			
Import, Repair, Edit Faceted Data	●	●	●
Shelling and Infills	●	●	●
Thickness Detection	●	●	●
REVERSE ENGINEERING			
Autosurface of Scanned Data	●	●	●
Build Solid/Surfaces on Scanned Data	●	●	●
INTERFACES AND ADD-ONS			
Algoryx Momentum[3]	●	●	●
Keyshot Rendering[3]	●	●	●

(1) Discovery Live supports mildly compressible fluid flow up to ~Mach 0.3
(2) Included with Discovery Standard and Ultimate
(3) Add-on Module

ADDITIVE SOLUTIONS	ADDITIVE PREP	ADDITIVE PRINT	ADDITIVE SUITE*	MECHANICAL ENTERPRISE
ADDITIVE PREP				
Define Build Envelope	●	■	●	
Multiple Parts	●	■	●	
Optimize Part Orientation based upon Distortion Tendency, Build Time, & Supports	●	■	●	
Support Regions Detection	●	●	●	
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	●			
TOPOLOGY AND LATICE OPTIMIZATION				
Structural Optimization				●
Modal Optimization				●
Thermal Loads				●
Inertial Loads				●

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

ADDITIVE SOLUTIONS	ADDITIVE PREP	ADDITIVE PRINT	ADDITIVE SUITE*	MECHANICAL ENTERPRISE
TOPOLOGY AND LATICE OPTIMIZATION (CONTINUED)				
Optimized Design Validation				●
Manufacturing Constraints				●
Stress Constraints				●
Symmetry				●
Lattice Optimization			●	■
Overhang / Additive Constraints			●	■
GEOMETRY AND STL FILE HANDLING				
SpaceClaim Direct Modeler		●	●	●
WORKBENCH ADDITIVE				
Nonlinear and Temperature Dependent Material Properties			●	
Thermo-Mechanical Coupled Strain Solution			●	
Native Mechanical Environment			●	
Stress-Based Automatically Generated Supports			●	
Part Distortion & Residual Stress (As-Built)			●	
Part Distortion & Residual Stress After Support Removal			●	
Blade Crash Detection			▲	
Identification of High Strain (Crack) Locations			●	
Layer by Layer Stress & Distortion Visualizations			●	
Option to Output Only the Last Layer of the Build or Every Nth Layer			●	

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

ADDITIVE SOLUTIONS	ADDITIVE PREP	ADDITIVE PRINT	ADDITIVE SUITE*	MECHANICAL ENTERPRISE
WORKBENCH ADDITIVE (CONTINUED)				
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 released			●	
Strain Scaling Factor for Thermal and Structural Analyses			●	
STL Files Can Be Exported from STL Supports			●	
ADDITIVE PRINT				
Nonlinear and Temperature Dependent Material Properties		●	●	
Uniform Assumed Isotropic Strain		●	●	
Scan Pattern Based Anisotropic Strain		●	●	
Thermal Ratcheting Based Anisotropic Strain		●	●	
Desktop & Cloud Stand-Alone Environments		●	●	
Stress-Based Automatically Generated Supports		●	●	
Part Distortion & Residual Stress (As-Built)		●	●	
Part Distortion & Residual Stress After Support Removal		●	●	
Distortion Compensation		●	●	
Blade Crash Detection		●	●	
Identification of High Strain (Crack) Locations		●	●	

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

ADDITIVE SOLUTIONS	ADDITIVE PREP	ADDITIVE PRINT	ADDITIVE SUITE*	MECHANICAL ENTERPRISE
ADDITIVE PRINT (CONTINUED)				
Input Strain Hardening Factor		●	●	
Import of STL Supports		●	●	
Subvoxel Material Density Assignment		●	●	
Layer by Layer Stress, Distortion & Blade Crash Visualizations		●	●	
Build File Readers for Multiple AM Machines		●	●	
Auto Queue Multiple Successive Simulations		●	●	
ADDITIVE SCIENCE				
Meltpool Dimensions			●	
Detailed Thermal History			▲	
% Porosity			●	
Sensor Measurement Predictions			▲	

* Additive Suite requires a Mechanical Enterprise license

OPTICAL	SPEOS PRO	SPEOS PREMIUM	SPEOS ENTERPRISE	SPEOS OPTICAL PART DESIGN	SPEOS OPTICAL SENSOR TEST	SPEOS HUD DESIGN & ANALYSIS	SPEOS FAR INFRARED EXTENSION	SPEOS OPTICAL DESIGN OPTIMIZER (1)
	PrepPOST PACKAGE			ADD-ONS				
ANSYS PRODUCTS EMBEDED								
ANSYS SpaceClaim Direct Modeler	●	●	●					
ANSYS SpaceClaim Catia V5 Interface	●	●	●					
ANSYS DesignXplorer	●	●	●					
ANSYS License Manager	●	●	●					
GENERAL SOLVER CAPABILITIES								
Monte-Carlo Forward Ray Tracing	●	●	●					
Monte-Carlo Backward Ray Tracing		●	●					
Deterministic Simulation	▲	●	●					
Spectral Propagation	●	●	●					
Polarisation propagation	●	●	●					
Dispersion	●	●	●					
Surface Diffusion	●	●	●					
Volumic Diffusion	●	●	●					
Ambiant Material	●	●	●					
SPEOS Live Preview (GPU Acceleration)		●(2)	●(2)					
Virtual BSDF			●(1)					
PHOTOMETRY / RADIOMETRY								
Intensity	●	●	●					
Illuminance	●	●	●					
3D Illuminance	●	●	●					

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

OPTICAL	SPEOS PRO	SPEOS PREMIUM	SPEOS ENTERPRISE	SPEOS OPTICAL PART DESIGN	SPEOS OPTICAL SENSOR TEST	SPEOS HUD DESIGN & ANALYSIS	SPEOS FAR INFRARED EXTENSION	SPEOS OPTICAL DESIGN OPTIMIZER (1)
	PrepPOST PACKAGE			ADD-ONS				
PHOTOMETRY / RADIOMETRY (CONTINUED)								
Luminance	▲	●	●					
3D Energy Density		●	●					
360° View - Observer		●	●					
360° View - Immersive		●	●					
HUMAN VISION								
Dynamic Adaptation			●					
Glare Simulation			●					
High Dynamic Range Screen support			●					
WAVELENGTH RANGE								
Visible (360nm - 830nm)	●	●	●					
UV (50nm-360 nm)		●	●					
Near IR (830nm - 2.5µm)		●	●					
Far Infra-Red (2.5µm -100µm)							●	
OPTICAL DESIGN								
Parabolic Surface	●	●	●					
TIR Lens	●	●	●					
Projection Lens	●	●	●					
Optical Lens				●				
Optical Surface				●				
Light Guide				●				

OPTICAL	SPEOS PRO	SPEOS PREMIUM	SPEOS ENTERPRISE	SPEOS OPTICAL PART DESIGN	SPEOS OPTICAL SENSOR TEST	SPEOS HUD DESIGN & ANALYSIS	SPEOS FAR INFRARED EXTENSION	SPEOS OPTICAL DESIGN OPTIMIZER (1)
	PrepPOST PACKAGE			ADD-ONS				
OPTICAL DESIGN (CONTINUED)								
Sharp Cut-Off Reflector				●				
Poly-Ellipsoidal Surface				●				
Micro Optical Stripes				●				
Freeform Lens				●(2)				
Honeycomb Lens				●				
OPTICAL SENSORS								
Field Of View					●			
Export Sensor Grid as Geometry					●			
Camera Sensor					●			
SPEOS Lens System Importer (ZEMAX OpticStudio)					●			
LiDAR Sensor					●			
Camera Sensor Post Processing					●			
HEAD-UP DISPLAY								
HUD Optical Analysis						●		
HUD Optical Design						●		
HUD Visualisation						●		
HPC - SPEOS								
Default Number of Cores	4	4	4					
Parallel Solving on Local PC	●	●	●					

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

OPTICAL	SPEOS PRO	SPEOS PREMIUM	SPEOS ENTERPRISE	SPEOS OPTICAL PART DESIGN	SPEOS OPTICAL SENSOR TEST	SPEOS HUD DESIGN & ANALYSIS	SPEOS FAR INFRARED EXTENSION	SPEOS OPTICAL DESIGN OPTIMIZER (1)
	PrepPOST PACKAGE			ADD-ONS				
HPC - SPEOS (CONTINUED)								
Parallel Solving on Cluster	●	●	●					
ANSYS RSM Compatibility	●	●	●					
SIMULATION PREPARATION								
Source Group	●(1)	●(1)	●(1)					
Geometry Group	●(1)	●(1)	●(1)					
Local Meshing	●(1)	●(1)	●(1)					
3D Textures		●	●					
Polarisation Plate		●(1)	●(1)					
Fluorescent Converter		●	●					
Texture Mapping (Bump, Multi-Layer)		●(1)	●(1)					
Uniform Ambiant Source	●	●	●					
HDRI Source	●	●	●					
CIE Sky Source		●	●					
Natural Light Source		●	●					
Thermic Source							●	
Earth Atmosphere Model							■	
POST PROCESSING								
Virtual Lighting Controller		●	●					
Photometric Numerical Certification	●	●	●					
Colorimetric Analysis	●	●	●					

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

OPTICAL	SPEOS PRO	SPEOS PREMIUM	SPEOS ENTERPRISE	SPEOS OPTICAL PART DESIGN	SPEOS OPTICAL SENSOR TEST	SPEOS HUD DESIGN & ANALYSIS	SPEOS FAR INFRARED EXTENSION	SPEOS OPTICAL DESIGN OPTIMIZER (1)
	PrepPOST PACKAGE			ADD-ONS				
POST PROCESSING (CONTINUED)								
Spectral Analysis		●	●					
Light Expert	●	●	●					
Layer by Source		●	●					
Layer by Face		●	●					
Layer by Sequence		●	●					
Stray Light Analysis		●	●					
Layer by Polarisation		●	●					
Visibility & Legibility			●					
Night Vision Goggle							●	
Script Automation	●	●	●					
OPTIMIZATION								
Parameters	●	●	●					
Design of Experiment	●	●	●					
Design Optimisation (1)								●
Design Optimisation through ANSYS DesignXplorer (2)	●	●	●					
ANSYS optiSLang Interface(2)	■	■	■					

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

OPTICAL	OMD PRO	OMD PREMIUM	OMD ENTERPRISE
OPTICAL MEASUREMENT DEVICE			
INCLUDED			
OMS2 Hardware	●		
OMS4 Gardware		●	●
Broadband Visible White Source Addon			●
Portable OMD Software	●		
Laboratory OMD Software		●	●
Labs Viewers	Included	Included	Included
MEASUREMENT CAPABILITY			
BRDF	●	●	●
BTDF		●	●
Reflective & Transmission spectrum (380-1000nm)		●	●
Roughness (Unpolished)		●	●
Volume Absorption		●	●
Volume Diffusion		●	●
Wavelength Range 380-725nm	RGB - Interpolate	Pectrum - Interpolate	Full Acquisition
Max Measurement Time	1min	4hours	32hours
Min Measurement Time	1min	5min	5min
Target Dynamic Range	10^6	10^8	10^8
Angular Optical Resolution (FWHM)	0.5°	0.1°	0.1° (or 0.5°)
Max Dimension	30cm	2.2m	2.2m

OPTICAL	OMD PRO	OMD PREMIUM	OMD ENTERPRISE
MEASUREMENT CAPABILITY (CONTINUED)			
White Led Light Sources	●		
Laser Light Source		●	●
USE CASES			
Light Modelling & Photometrical Simulations		●	●
Visual Ergonomics & Style Studies	●	●	●
POST PROCESSING			
Interpolation Enhancement	Automated	Tunable	Tunable
Effective Anisotropy Reconstruction from 2 Measures	●	●	●
Labs Viewer & Editor	Included	Included	Included
Theoretical Peak Reconstruction	●	●	●
BRDF Visualisation & Processing	●	●	●

Notes :
(1) Not available for ANSYS SPEOS
(2) Only for ANSYS SPEOS

MATERIALS	GRANTA MI ENTERPRISE	GRANTA MI PRO	GRANTA SELECTOR	GRANTA EDUPACK
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	●	●		
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, AM, Restricted Substances	●			
Toolbox for Import, Export, Manipulation of Materials Data	●			
Web App for Fast Upload 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	●			

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

MATERIALS	GRANTA MI ENTERPRISE	GRANTA MI PRO	GRANTA SELECTOR	GRANTA EDUPACK
MATERIALS DATA MANAGEMENT (CONTINUED)				
Export Data to Excel and Third-Party Software	●	▲	●	●
Personalize System Homepages and User Profiles	●			
Configure Web App UI for Specific User Groups	●			
MATERIALS DATA ANALYSIS				
Interactive Plotting of Data: Scatter, Contour, Error Bar, Surface, Plotyy, Semilogx, Semilogy, Loglog	●			
Curve Fitting	●			
Cross-Table Comparisons of Materials Data	●			
Scripting Toolkit for Python and MATLAB	●			
WORKFLOW MANAGEMENT				
Design and Develop Workflows	●			
Execute Workflows - Processes, Approvals, Notifications	●			
INTEGRATION WITH CAD, CAE, PLM				
ANSYS	●	●		
Abaqus	●			
ANSA	●			
HyperMesh	●			
Creo	●			
NX	●	●		
CATIA v5	●			

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

MATERIALS	GRANTA MI ENTERPRISE	GRANTA MI PRO	GRANTA SELECTOR	GRANTA EDUPACK
INTEGRATION WITH CAD, CAE, PLM (CONTINUED)				
Windchill	●			
Teamcenter	●			
3DEXPERIENCE	●			
File export	●	▲	●	●
RESTRICTED SUBSTANCES				
Data structures to Support Restricted Substance Analytics: Store Specs, Materials, Legislations, Substances, Parts	●			
Report on Restricted Substance Risk for Materials and Process Portfolio	●			
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 Restricted Substance Reporting with PLM, CAD	▲			
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	●	●	●	●

MATERIALS	GRANTA MI ENTERPRISE	GRANTA MI PRO	GRANTA SELECTOR	GRANTA EDUPACK
MATERIALS SELECTION & RELATED TOOLS (CONTINUED)				
Filter Materials Based on Links to Other Materials / Processes / Objects	▲	▲	●	●
Materials Substitution & Equivalency - 'Find Similar'			●	
Performance Index Finder			●	●
Engineering Solver - Convert Engineering Requirements to Materials Properties			●	
Hybrid Synthesizer - Predict Properties of Hybrid Materials			●	●
Part Cost Estimator			●	●
Selection Reports & Export of Charts for Presentations			●	●
Eco Audit for a Product or Conceptual Design			●	●
Edit a GRANTA Selector Database			●	
DATA LIBRARY FOR INDUSTRY				
MaterialUniverse Generic Data for Selection	●		●	
MI Pro Simulation Data		●		
JAHM Curve Data for Simulation	●		●	
Metals Data Bundle	●		●	
Polymers Data Bundle	●		●	
Composites Data Bundle	●		●	
Medical Data Bundle	●			
Aero Data Bundle	●		●	

MATERIALS	GRANTA MI ENTERPRISE	GRANTA MI PRO	GRANTA SELECTOR	GRANTA EDUPACK
DATA LIBRARY FOR INDUSTRY (CONTINUED)				
Additive Data Bundle	●		●	
ESDU MMDH Aero Alloys	●			
UL Yellow Cards	●			
TEACHING RESOURCES				
GRANTA EduPack Level 1-3 Teaching Databases				●
The Elements Teaching Database				●
Materials Science & Engineering Teaching Database				●
Sustainability Teaching Database				●
Bioengineering Teaching Database				●
Architecture Teaching Database				●
Lecture Units				●
Student Exercises				●
Videos				●
Micro-Projects				●
White Papers				●
Case Studies				●
Active Learning Toolkits				●
Data Booklets				●
Sample Project Files				●
Phase Diagram Tool				●