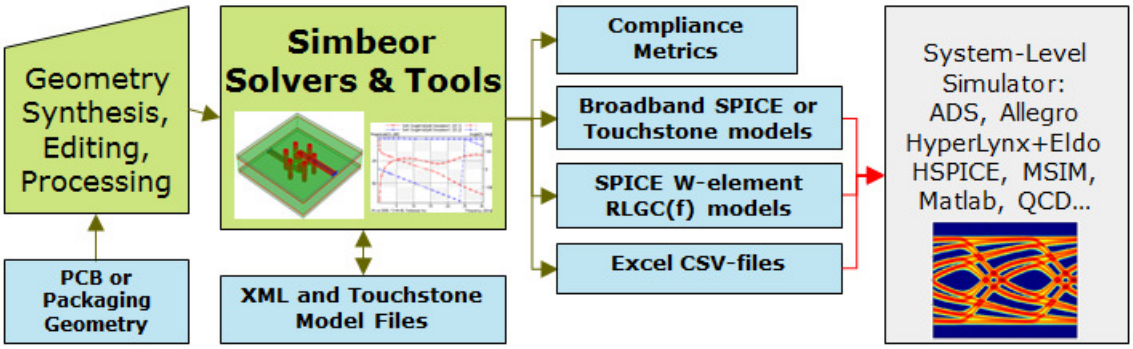
Simberian
Electromagnetic Solutions

Simbeor®

Electromagnetic Signal Integrity Software™

Accurate, Fast, Easy and Affordable Software for Physical Design of PCB and Packaging Interconnects Operating at 6-100 Gb/s and Beyond

Faster data rates drive the need for design of minimal-reflection and low-loss interconnect links. **Simbeor is the one-stop solution for all interconnect budget exploration (pre-layout), design verification (post-layout), material parameters identification and macro-modeling tasks.** Simbeor is an industry-first measurement-validated tool to synthesize controlled-impedance geometry for transmission lines and via-holes, to build advanced electromagnetic models for all elements of PCB and packaging interconnects and to simulate a complete data link in frequency and time domains. The accuracy of the models is ensured in Simbeor through the use of advanced algorithms for 3D full wave analysis, benchmarking and experimental validation. **Simbeor beats the competition hands down, when it comes to validation of analysis with the measurements!** Simulation of data links with the electromagnetic models eliminates uncertainties of simplified models and guaranties the first pass design success.



Use Simbeor For…

- PCB and packaging interconnects budget exploration (pre-layout) and design verification (post-layout) with advanced 3D full-wave de-compositional frequency and time-domain compliance analyses
- Synthesis of geometry for impedance controlled transmission lines and minimal-reflection via-holes
- Advanced electromagnetic modeling of transmission lines, via-holes and discontinuities in data links
- Building rational compact and broadband SPICE macro-models for consistent time and frequency domain analyses of interconnects, connectors, packages, and complete data links
- Automation of S-parameter models quality assurance and all macro-modeling tasks
- Identification of models for conductive and dielectric materials with measurements (patent pending)
- Clarifying doubts about results obtained with measurements or with your current EM or SI tool

Simbeor Technology

Simbeor innovative technology combines results of over 25 years of research and development. Hybrid simulation technique is based on the method of lines (MoL) and Trefftz finite element method (TFEM). MoL provides fast and accurate solution for multi-layered dielectrics and metal planes. TFEM is used to simulate trace conductors interior with rough surfaces. Method of simultaneous diagonalization is used for extraction of parameters of multi-conductor transmission lines and periodic structures and for precise de-embedding of discontinuities. Fast and accurate de-compositional analysis with rational macro-modeling is used to simulate a complete communication link consistently in frequency and time domains.

Simberian
Electromagnetic Solutions

Simbeor®

Benefits	Features
Accuracy	**Validated with benchmarks and measurements from DC to 50 GHz** Accurate broadband material parameters identification with unique patent-pending algorithm Causal multi-pole and wideband Debye dielectric dispersion and loss models Simulation of regular and multilayered conductors with unique models for nickel and surface roughness Precise fitting with passive and causal rational macro models with extrapolation to DC and to infinity Consistent frequency and time-domain analyses with S-parameter models
Efficiency	**Fast 64-bit parallelized electromagnetic analysis and rational macro-modeling engines** Fast and accurate de-compositional frequency, TDR/TDT, PRBS and compliance analyses of interconnects Fast synthesis of geometry for single and differential via-holes with Via Analyzer™ tool Automation of S-parameters quality assurance and all macro-modeling tasks with Touchstone Analyzer™ tool Fast interactive tuning and optimization of via geometries and linear networks with SiTune™ tool
Ease of use	Wizards to enter 3D geometry of transmission lines and via-holes with all elements for EM analysis Import of PCB geometry files with geometry selection and automatic de-composition capabilities Intuitive network, geometry and via-hole editors with synchronized graphical and tree views Automatic RLGC(f) p.u.l. parameters extraction for t-lines and periodic structures with output in SPICE format Automatic de-embedded multiport S-parameters extraction with output in Touchstone and BB SPICE formats Interactive plots for t-lines parameters, S, Y and Z parameters, time-domain responses, and compliance metrics
Affordability	**Low cost, flexible subscription scheme, node-locked and floating or network licenses**

System requirements

- Windows XP/Vista/7 (32-bit and 64-bit) and compatible operating systems
- 1 GHz or faster processor with 2 GB memory, 2-3 GHz systems with 8 GB memory are preferable
- 3D graphic card with OpenGL support

Support

Simberian engineers can answer your technical questions by telephone +1-702-876-2882 (skype *simberian*) or by e-mail support@simberian.com. They can also provide technical assistance and online on onsite training. Simberian Knowledge Base www.kb.simberian.com gives you answers to your technical questions – 24 hours a day, 7 days a week.

Features\Simbeor License Type	Qualify (S-parameters)	Explore (pre-layout)	Complete (all features)
Max number of ports in rational macro-models	16	32	1024
S-parameters quality assurance in ***Touchstone Analyzer***™	X	X	X
Linear multiport network analysis in frequency and time domains	X	X	X
3D electromagnetic analysis	-	X	X
Geometry synthesis with wizards and ***Via Analyzer***™	-	X	X
Optimization in ***SiTune***™	-	-	X
PCB geometry translator (post-layout analysis, ODB++ by default)	-	-	1

Optional PCB geometry translator for Simbeor Complete. We support 2 users per network license. Online seminars and training classes, technical product support and software updates are included with all annual licenses.

For more information and to order Simbeor software

Contact Simberian at:
Tel/Fax +1-702-876-2882; Virtual +1-408-627-7706; Skype *simberian*
E-mail info@simberian.com or sales@simberian.com

Distributed in Asia Pacific region by : Polar Instruments (Asia Pacific) Pte. Ltd., Singapore
Tel : +65 6873 7470, Fax : +65 6873 7471
E-mail : mail@poalrinstruments.asia Web : www.polarinstruments.asia

Visit www.simberian.com for more information and to download fully functional software for evaluation.