

Survey of CAE Software Companies

Design Tasks They are Active in

This Survey Dates From 2002

- Warning: The CAE commercial software tool marketplace is dynamic and this survey by me is dated.
- Two additional, more current, web pages to reference are:
 - The IEEE Society maintains a list of resources at:
 - <http://www.ieeeaps.org/emlib/emlib.html>
 - This list is orientated to EMI-EMC software including freeware.
 - Professor Todd Hubing maintains a list of CEM programs at:
 - <http://www.cvel.clemson.edu/modeling/EMAG/csoft.html>

Co-operation Amongst Software Companies

- No one company covers all design tasks at once. Indeed, I would question their focus and excellence at anything if they tried to cover too much of the design space at once.
- However in the tables that follow you will be able to see that all simulator companies, taken together, cover almost all of the bases in the design space.

Co-operation Amongst Software Companies (cont.)

- This suggests that today's design challenges could be well met if the simulator companies work together as a team. Further, I suggest that those companies that can cooperate with potential competitors will continue to survive, evolve and succeed.
- I believe that those companies that cannot cooperate with potential rivals will not survive and be eliminated as unfit.

Software Companies Providing CAE Tools (cont.)

Key	Company	URL
EMCS	EMCoS	http://www.emcos.com/
FLO	Flomerics/FloEMC	http://www.floemc.com/
FU	Fujitsu	http://www.accufield.com/
M	Magma Design Automation	http://www.magma-da.com/c/@saAXEynp3_muw/Pages/index.html
OEA	OEA International	http://www.oea.com/
OP	OptEM	http://www.optem.com
Q	Quantic EMC	http://www.quantec-emc.com
S	Silvaco	http://www.silvaco.com/homepage.html
SIG	Sigrity	http://www.sigrity.com
SIM	SimLab	http://www.simlab-emc.com
SIS	SiSoft	http://www.sisoft.com

Software Companies Providing CAE Tools (cont.)

Key	Company	URL
SOS	SoftSim	http://www.technology-sources.com
SON	Sonnet	http://www.sonnetusa.com
SYN	Synopsys	http://www.synopsys.com/
T	Tanner EDA	http://www.tanner.com/EDA
W	Wavecrest	http://www.wavecrest.com/
ZE	Zeland	http://www.zeland.com/
ZU	Zuken	http://www.zuken.com

Model Extraction: Die and Package

Task	IC Die	IC Package
TCAD active cell simulation	S	
Active cell SPICE extraction	AST OEA OP S T	AST
Interconnect SPICE extraction	AST C M OEA OP S SIG SYN T ZE	AN AST B C OEA OP SIG SIS ZE
IBIS generation &/or validation	AST OP SIS ZU	AST C SIS
S, Y, Z matrix extraction	AN AST OP ZE	AST B OP SIG SIS ZE

Model Extraction: Topology, .ebd, Stackup, Cables, Connectors, etc.

Task	Virtual: Topology, Etch & Stackup	Components, Cables, Connectors, Boards, etc.
Interconnect SPICE extraction	AST C OP Q S SIG SIM SIS	AST B C CST EMCS OEA OP Q SIG SIM SON SYN W ZE
ICEM 62014-3 variables extract	S	
S, Y, Z matrix extraction	AST OP SIG SIS	AST B CST EMCS OP SIG SYN ZE
E & H vector extraction	AST	AST B CST EMCS Q ZE

Simulation: Die and Package

Task	IC Die	IC Package
Signal Integrity	AST B M OEA OP SYN T ZE	AN AST B C CST OEA OP SIG SOS SON ZE
Power Integrity	B M OEA ZE	AN AST B CST OEA SIG ZE
Crosstalk Coupling	AST B M OEA OP SYN T ZE	AST B C CST OEA OP SIG SOS SON ZE
EMI	AST B S SYN ZE	AST B CST S SIG SOS SYN ZE

Simulation: Topology (Schematic) & Board Layout

Task	Topology	PCB
Signal Integrity	AL AST C OP Q SIG SIS SOS	AL AN AST B C EMCS FU OEA OP Q SIM SIS SOS SON W ZE
Power Integrity	AST SIG	AN AST B C EMCS FU OEA SIG ZE
Crosstalk Coupling	AST C OP Q SIG SIS	AN AST B C EMCS FU OEA OP Q SIG SIM SIS SOS SON W ZE
EMI	AST C SIG	AST B C EMCS FLO FU Q SIG SIM SOS ZE

Simulation: Board-to-Board and System

Task	PCB to PCB	System
Signal Integrity	AST C CST EMCS FU OEA OP Q SIG SIM SIS SOS W ZE	C EMCS FU OEA OP SIG
Power Integrity	AST CST EMCS FLO FU OEA SIG ZE	EMCS FLO FU SIG
Crosstalk Coupling	AST C CST EMCS FU OEA OP Q SIG SIM SOS W ZE	C EMCS FU OP SIG
EMI	AST CST EMCS FU Q SIG SIM SIS ZE	AN EMCS FLO FU SIG