



In good shape

In its three decades, electronic design automation has rarely strayed far from the headlines. And that's the case today, with Cadence pursuing a hostile takeover of rival Mentor Graphics.

Should Cadence succeed, how might that affect the eda sector? Some observers are worried about the concentration of market share in the hands of one company and the potential for product development to slow.

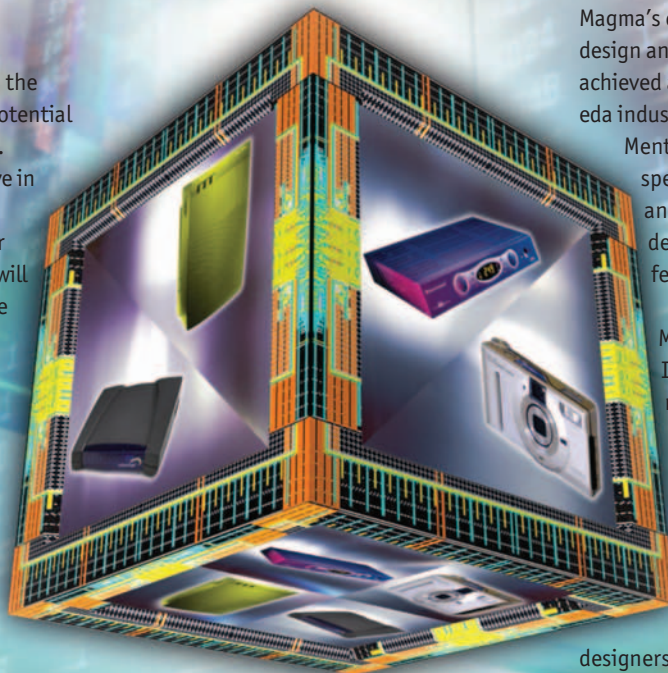
So, will the eda industry survive in its current form? "Primarily," said Gary Smith, ceo of market watcher Gary Smith EDA. "The big change will be that the main source of revenue will no longer be semiconductor design; it will be system, or subsystem, design targeting pcb based microprocessor and fpga based fabrics."

But he says we shouldn't count on companies like Cadence, Mentor, Synopsys and Magma being around in the future. "And the 'middle ground' isn't very stable either."

The big companies still focus on chip design at the bleeding edge – 65nm and smaller. Nitin Deo, design for manufacture group marketing director for Cadence, said: "Complexity is increasing, performance is increasing and requirements are increasing. But users need to complete designs more quickly. They have aggressive schedules, but can they get the design done in time? Time to volume is now very important."

It's an acute problem on the leading edge, such as 45nm, where costs are immense and failure – even low yields – is unacceptable. Cadence recently launched

Developments in eda and manufacturing set to shape the future. By Graham Pitcher.



major upgrades to its Virtuoso platform, including the Spectre Circuit Simulator with turbo technology. This package, aimed at analogue and mixed signal designs with extensive parasitics, speeds verification time by a factor of 10.

Mike Demler of Synopsys pointed out the increasing influence of analogue design on the eda world. "People say it's a digital revolution, but it's all enabled by analogue design. Because a lot of this is aimed at the consumer world, it has to be cheap and we need to enable analogue and digital to work on the same chip."

The most important tool for the future, he claimed, is circuit simulation. "And we need to offer silicon accurate simulation."

Magma also targeted mixed signal design with Titan. Rajeev Madhavan, Magma's ceo, said: "With Talus for digital design and Titan for mixed signal, we have achieved a level of integration that the eda industry has never before provided."

Mentor looked at two areas this year: speeding SoC design verification; and, along with Agilent, improving design productivity in pcbs featuring rf circuits.

Supporting the first approach, Mentor launched Questa and InFact. John Lenyo, director of marketing for Mentor's design verification and test division, claimed: "We're trying to bridge the gap between functional and architectural verification, so users can do tests once."

Its solution for the second area enables mixed signal pcb designers to develop a pcb concurrently using its Expedition Enterprise or Board Station XE flows and Agilent's Advanced Design System eda software for rf design and simulation.

What does Smith see as the challenges for the future? "Software, primarily. We will no longer be using C in five years and we will need a new software development infrastructure for whatever concurrent language will be used. This is being driven by the move from a Von Neumann computer architecture to a many core/processor architecture. The second, longer term, challenge is to come up with a design fabric other than cmos silicon by 2020."

1987:
Acorn Archimedes introduced. IBM launches PS/2 range.
STMicroelectronics created by the merger of SGS Microelettronica and Thomson Semiconducteurs.

1989:
The first of the 24 satellites in the Global Positioning System is placed into orbit. Intel launches the 486 microprocessor. Inmos launches 32bit Transputer.



Mark Liu, TSMC's senior vp of Advanced Technology Business, said: "Intel, Samsung, and TSMC believe the transition to 450mm wafers is a potential solution to maintain a reasonable cost structure for the industry."

Cores for celebration?

MIPS believes the cpu IP model is the wave of the future – at least for embedded/ consumer electronics applications. Claiming more and more embedded products are moving towards SoC designs, where the primary objectives are high volume, low cost and low power, MIPS says its approach is more appropriate than the 'old way' of using standard silicon.

CPUs are taking up less space in an SoC as designs get bigger, so the problem for the developer goes beyond cpu design, it claims. But cpu design is still important as designers need to choose from a range of cpus. Meanwhile, cpus themselves are becoming multithread/multicore devices.

environment and still got to market a year earlier than it would have if it developed its own core. We're now chasing up to 10 opportunities where companies are looking to transition to MIPS because of the cost advantage compared to their current models."

REACH for the sky?

The latest regulation to be enacted is REACH, which is looking to protect health through reducing exposure to a range of chemicals. But more EC Directives loom – some on the horizon, some closer. Expect to have to deal with revisions to the EMC Directive, as well as what's being called 'RoHS2', likely to expand the current coverage of restricted substances and product categories.

A new Battery Directive is scheduled for 26 September, with widespread producer responsibilities. Importantly, use of NiCd batteries will be banned, except in three categories.

"And Eup Directive reviews are continuing," said Gary Nevison of Farnell. "Implementing Measures (or mini Directives) will also be published from time to time, aiming to improve energy efficiency throughout a product's life cycle. These will have a big impact on the electronics design engineer."

"The UK's strength in electronics design will continue ..." Dirk Weinsziehr, Fujitsu Microelectronics Europe

Wafer woes?

The trend amongst semiconductor companies is to go 'asset lite' or 'asset free'. Either approach is good news for the foundries, who continue to go from strength to strength.

TSMC, the market leader, has signalled its readiness to unveil a 32nm process in the near future. It's already made a 40nm process available, which has been picked up by Altera.

But whilst features get smaller, will wafers get bigger? Intel, Samsung and TSMC believe the industry will need to start the move to 450mm wafers (in contrast to today's 300mm wafers) in 2012. Between them, they produce a large portion of industry production and could make the move happen.

Microchip is one company which has taken the MIPS route. Jack Browne, MIPS' vp of marketing, pictured below, said: "It spent time integrating our tools into its



The future?

The future looks good for UK electronics, says Dirk Weinsziehr, vp marketing and development, for Fujitsu Microelectronics Europe. "The UK's strength in electronics design will continue to be reflected in the number of chipless, fabless and ic design houses. A report from Future Horizons shows the UK's share of these companies currently stands at 31.9% – three times as many as other European regions.

"Despite the irreversible movement of large scale manufacturing offshore, I believe UK CEMs will continue to thrive, working on small to medium size and niche manufacturing projects that demand high level support and local management." ■

1990:
ARM spins out of Acorn.

1991:
The first GSM mobile phone network opened in Europe.
The number of computers on the net reaches 1million.