ElectronicsJournal
Business & Technology in Today's Electronics

NEW BUSINESS TRENDS
By Joe Lowell

Electronic Design Automation

Now Glamorous on Wall Street

Just two years ago, the electronic- design-automation (EDA) industry watched helplessly as Wall Street and investors piled billions into dot.com IPOs while dreaming of returns of 1,000-percent or more. Investors and analysts ignored an industry that for 20 years experienced growth rates of between 15 percent to 20 percent each year.

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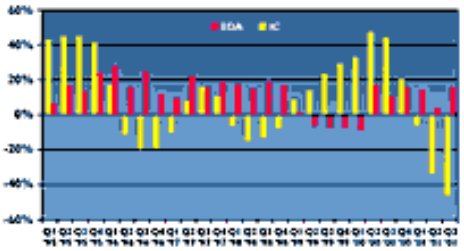
As dot.coms turned into dot.bombs, Wall Street switched its focus to the EDA industry, which capped 2001 with a little revenge. One of its own, Verisity, had the street's biggest IPO. The company, which makes automated functional-verification tools, realized a 170.7-percent increase over its offering price in March 2001. In addition, the EDA industry had seven of the street's top 25 IPOs. "That's sort of a huge turnaround and really indicates how much things have changed for EDA," says Moshe Gavrielov, Verisity's CEO.

EDA's success on Wall Street seems even more amazing compared to the rest of the electronics industry, which saw sales plummet to record lows. Sharp sales downturns occurred in semiconductors, electronic systems, and the communications segments. As semiconductor sales fell 32 percent in 2001 and capital-equipment sales tanked, EDA recorded a 6-percent increase in sales over 2000, reaching $4 billion for the first time.

The EDA industry has seen consistent growth throughout the years, despite the volatility of the semiconductor industry. Because of an increase in sales during the current recession, EDA CEOs are grateful to have survived the current downturn. EDA companies also spared investors who stayed with their stock, as opposed to more volatile ones.



(click to enlarge)

Figure 1. This graphic clearly illustrates EDA's long-term financial durability over the past seven years. When the semiconductor industry slumps, the EDA industry generally records upticks. In 2001, the EDA industry recorded nearly $4 billion in sales. (Source: Electronic Design Automation Consortium)

Also in 2001, Wall Street seemed to recognize the EDA industry for its value in enabling growth and success of the nearly $1-trillion electronics industry. As other industries shed hundreds of thousands of jobs, EDA employment grew by 18 percent.

CEOs fret that Wall Street is only paying attention to their companies because they look so much better than everything else, not because of their fundamental characteristics. They want to make their point that the EDA and semiconductor industries drive economies out of recessions, while contributing just as much during economic good times.

Four years ago, Wall Street believed that EDA was a small industry, that no other EDA companies would go public, that no one would invest in EDA start-ups, and that in-house tools would make a comeback, Gavrielov says. "That was the common wisdom

four years ago," he says. "I think it was sort of incredibly widespread, and there was this massive exodus from the industry." Today, he says with a smile, Wall Street believes that still holds true despite the continued success of the $4-billion EDA industry.

In 2002, executives at EDA companies are "all sort of pinching ourselves, and feel that we're in some sort of dream, but the general concepts are the same. This is still a very poorly understood business, and the value it provides, and the importance of it to our customers, to the whole economy, is very significantly understated," Gavrielov says.

New EDA companies are emerging that target changes in design, fueling a dramatic improvement in methodology and productivity across the electronics sector.

Growth to Return but Issues Remain Within EDA Industry

Industry analysts see the EDA market growing as much as 5 percent this year and 10 percent next year. That view seems quite optimistic given that EDA companies will have to continue to tough it out with customers who are spending less on R&D because of the downturn. The industry has other issues to contend with as well.

Garo Toomajanian, an EDA analyst at RBC Capital Market, says EDA vendors continue to experience a sizeable pullback in share valuations along with the broader market. "Customer tool spending continues to be under scrutiny and end-market visibility remains cloudy," he says, although spending on renewals and must-have technology continues.

Analyst Erach Desai of Desaisive Research Inc. in Boston told Electronic News in January that he projects 8-percent to 10-percent growth in 2002. "That's not bad; but, normal growth should be 15 percent," he says. "So, in that sense it's under performing."

Another driver of the EDA market lies within the growing complexity of the chips and the shift to 0.18-micron designs, which creates demand for increasingly sophisticated chip and system design, verification, and test tools.

To continue its success, however, the EDA industry must learn to adapt to handle new design issues to avoid a substantial hit, warns Simon Davidmann, CEO of Co-Design Automation, in Los Altos, CA. Industry surveys have shown that verification remains a significant bottleneck, requiring a full

70 percent of time given to a project, he says. "The problem is that the general EDA industry is not keeping pace," he says. "This is bound to limit design and technology advancement across the electronics sector."

Validating the latest devices, complete with embedded processors, while also minimizing the verification overhead remains the task of next-generation simulation systems, he says. Streamlining the design flow from a high level to tapeout draws the focus of another new breed of implementation tools, Davidmann says.

EDA companies that leverage the discontinuity, not to mention the economic turmoil, will come out on top in this new design era, he says. New EDA companies are emerging that target changes in design, fueling a dramatic improvement in methodology and productivity across the electronics sector, he says.

"So, my EDA industry forecast is for sunnier times in the short term for companies that work with design-methodology changes," he says. "Companies that can't embrace the change will find it easy to blame a poor economic climate."

Electronics Industry Comes to the Rescue Again

Experts say that electronic innovation helped break the back of previous recessions. Commercialization of the integrated circuit played a role in driving the economy out of

the stagflation of the 1970s' recession. The consumer PC boom helped drive the United States economy out of its recession in 1985. The explosion of interest in the Internet helped drive the country out of the recession in the early 1990s. Given that history, analysts and others fully expect the electronics industry to lead the United States out of its current recession.

EDA CEOs believe that their industry paves the way for next-generation technologies. When semiconductor sales tank, companies have to design themselves out of the slump. During cyclical downturns, chipmakers invest in designing their next must-have products, which prompts them to spend R&D money on EDA tools. That is exactly what is occurring.

(click to enlarge)
Figure 2. EDA Outlook Bright

Subtle signs of a recovery are emerging in the electronics industry, experts say (Figure 2). The semiconductor industry went into the current downturn ahead of the worldwide global recession and then had to burn through enormous excess inventory. Inventories have come down the past few quarters to the point of reaching spot shortages in the markets for DRAM and glass used for flat-panel displays. Foundries are starting to show monthly sequential growth, and capacity is slowly starting to book up, although it remains at a very low level.

Other harbingers of hope include 40, 300-millimeter wafer fabs scheduled to come on line over the next several years. Those fabs have enough capacity to meet demand for the next three to four years, which should make for a sustained recovery, experts say.

While the industry has to contend with a consolidating computer industry, it has the benefit of a disintegrating communications industry that has created dozens of new customers. That should send demand for EDA tools upward as well.

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That gives EDA start-ups a chance, Gavrielov says. "What you need to do is to find a killer problem and provide the real solution. There are ample opportunities around," he says.

(click to enlarge)
Figure 3. Why Wall Street is Listening

Gavrielov dismisses a belief that says all possible ingenuity has already been delivered. "That is absolutely not true," he says. "There are huge opportunities ahead of us." He also scoffs at Wall Street's notion that semiconductor companies and design houses will develop their own tools. "That just isn't going to happen. Not that there aren't very good people inside the companies we support; it's just a waste of their time to try and do this. They need to differentiate vis-à-vis the competition. We will provide the tools to them so they can compete and actually add value."

CEOs Maintain Optimism

Mike Tsai, president and CEO of Axis Systems, a verification start-up, remains bullish about EDA's future, especially given its successful past (Figure 3). The EDA industry has experienced 20 years of growth without a correction, he notes, and has won hundreds of patents. Its critical role in the semiconductor value chain means it enhances engineering productivity, which translates into greater profits for companies. In addition, EDA is experiencing its highest revenue, gross margins, operating incomes,

operating margins, and net income. “We are an industry that for over 20 years has had no setback,” he says. “Every year, we are continuously growing, and very few industries can say that.”

Aart de Geus, chairman of Synopsys, which is acquiring Avant!, says the electronics industry is recovering from the huge party that it had in 1999 and 2000. “The headache phase, the hangover, will be as long as the party, which is 2001 and a portion of ’02,” he says.

He likens the current downturn to a cocoon in which new technologies are developing. Even now, someone somewhere is inventing the next-generation technology. “By the time it comes out, by the time people come out of the cocoon, we’re going to see an old phenomenon we know very well—Moore’s Law, which will keep EDA companies and start-ups racing to provide tools to bridge the ever-widening design gap,” he says. “Our industry is at the heart of the heart of the heart of high tech. When the cocoon opens up, it will be our job to make sure that our customers are not moths, but butterflies.”

EDA’s financial results and overall success of the past 20 years would indicate that the industry is up to the task.

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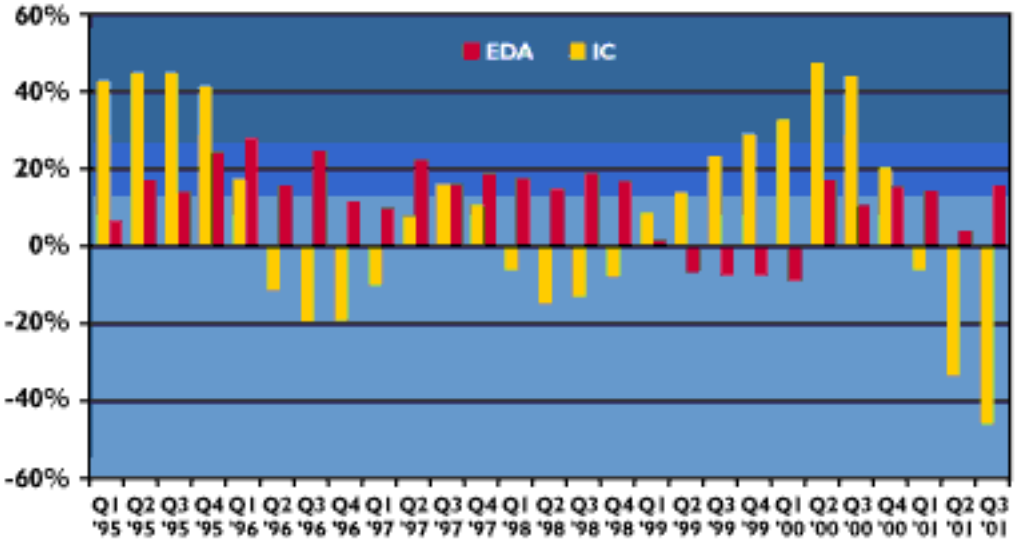

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Figure 2. Signs point to an increased demand for semiconductor products in the second half of 2002 and 2003, following a record downturn in the electronics industry in 2001. (Source: Electronic Design Automation Consortium)

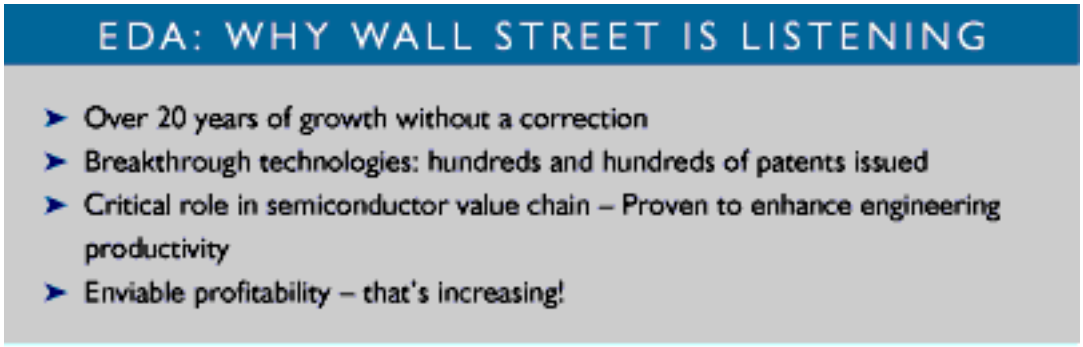

Figure 3. The EDA industry has long known its value in the semiconductor value chain, but analysts are finally beginning to notice the industry's worth. EDA executives say that their industry has helped the electronics industry drive the country out of previous recessions. (Source: Axis Systems)