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CAD Toolsets: Today, Tomorrow and Over the Horizon

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One of the most enabling product industries in the world today is Computer Automated Design (CAD). Can you imagine how far technology would have progressed if not for the automation of computer design? CAD has had a major impact on technologies available today, yet users of CAD toolsets take for granted the advancements that have been made throughout the years.

This presentation, instead of focusing on CAD's past, will take a look at the strength and weaknesses of today's CAD toolsets. We'll take a look at where current development is taking these toolsets and we'll even take a look into my crystal ball to see how the future demand for electronic products will shape the toolsets of tomorrow (given that they still will have to keep up with time-to-market, correct-by-design and all the other industry demands).

Today's CAD Industry
Today's CAD industry is one of the most enabling industries in the world today. However, advancements that have been made in the way of automation have largely been taken for granted. Today's toolset users are focused so much on doing their job and getting "near perfect" product out the door on and time they have no time to sit back, throw up one's feet and reminisce. But, imagine trying to get product out the door today without automation?

Let's try to understand where we are today and take a look into my crystal ball at tomorrow and the future.

Important Perspective:

Someone's today
is another person's tomorrow
and that person's tomorrow
is another person's future!

Today's CAD Toolsets
The toolset landscape has changed. Previously, vendors focused on 3 distinct markets: low-end, middle range and high-end. However, vendor mergers and acquisitions have left only a handful of "viable" vendors fighting for market share of today's RTU, workgroup and enterprise markets.

In the past, the automation of advanced technologies was handled mostly in MCM/hybrid design tools.
Today as advanced technologies have become much more mainstream the need for advanced technology capability has moved outside of MCM/hybrid toolsets of the past. It is no longer as simple anymore for companies to develop their own "in-house" toolsets. And the use of "work-arounds" within toolsets are not time-to-market friendly. A lack of "standardization" of advanced technologies forced CAD companies to sit in the background and silently watch not wanting a repeat of the "MCM bust".

Of course, some companies have been willing to pay CAD vendors to develop technology solutions for express use, releasing these solutions to market normally 6 months to 2 years after their development to maintain or gain a competitive edge.

This has been keeping alive my statement (made during my early consulting days) that, "CAD toolsets are 3-5 years behind the technologies they were designed to automate".

Tomorrow's CAD Toolsets
When is tomorrow? Well, tomorrow is here today!!! Numerous companies are/have implemented next generation technologies silently. Tomorrow's capabilities have been available to those companies willing to pay to stay competitive (or develop toolsets themselves).

Tomorrow's CAD toolset vendors:
- Must have a unique understanding of product, manufacturing and material capability.

- Must have an uncanny ability to “guess” as to which advanced technologies will become mainstream.

The ultimate solution is one that has the right combination of viable materials, fabrication and manufacturing processes, and overall cost.

And what are tomorrow’s capabilities?
- Automation for embedded component technologies
- Automation for HDI/Microvia technologies
- Team/concurrent design
- “High-speed” auto routing
- Comprehensive DRC (design rule checking)
- True EM design

Future CAD Toolsets: Over the Horizon
The technologies of future already being examined today! We should all admire the innovation and be thankful for government funding. The goal is to figure out way to cost effectively implement technology. And the technologies that could revolutionize the consumer electronics market will not be ones that are expensive. The CAD vendors of the future should be disencumbering their toolsets from today’s reality.

Summary:
Someone’s today
is another person’s tomorrow
and that person’s tomorrow
is another person’s future!

It’s a crapshoot, but someone is going to win!!!

CAD Toolsets: Today, Tomorrow and over the Horizon

Michael Fitts
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IPC Expo/Apex 2004
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Today's CAD Industry

- One of the most enabling industries in the world today
- Advancements that have been made in the way of automation have largely been taken for granted
  - Toolset users are focused so much on doing their job and getting "near perfect" product out the door on and time
  - No time to sit back, throw up one's feet and reminisce
- Imagine trying to get product out the door today without automation?

LET'S TALK!

Let's try to understand where we are today and take a look into my crystal ball at tomorrow and the future.

Important Perspective

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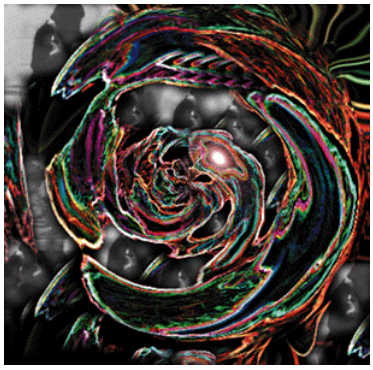
Today's CAD Toolsets

- **Landscape has changed**
  - **Vendors previously focused on 3 distinct markets**
    - **Low-end, middle range and high-end**
  - **Vendor mergers and acquisitions leave a handful of "viable" vendors fighting for market share of today's RTU, workgroup and enterprise markets.**
- **In the past, the automation of advanced technologies were handled mostly in MCM/hybrid design tools**
- **Today as advanced technologies have become much more mainstream**
  - **The need for advanced technology capability has moved outside of MCM/hybrid toolsets of the past**
  - **Not as simple anymore for companies to develop their own "in-house" toolsets**
  - **The use of "work-arounds" within toolsets are not time-to-market friendly**

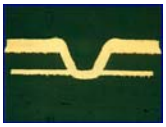
Today's CAD Toolsets

- **A lack of "standardization" of advanced technologies forced CAD companies to sit in the background and silently watch not wanting a repeat of the "MCM bust".**
- **Of course, some companies have been willing to pay CAD vendors to develop technology solutions for express use, releasing these solutions to market normally 6 months to 2 years after their development to maintain or gain a competitive edge.**
- **This has been keeping alive my statement (made during my early consulting days) that, "CAD toolsets are 3-5 years behind the technologies they were designed to automate".**

TOMORROW



Tomorrow's CAD Toolsets



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Tomorrow's CAD Toolsets

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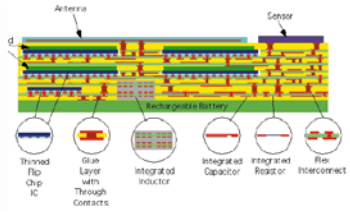

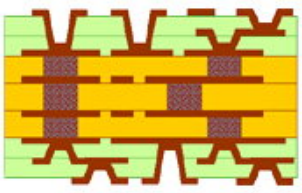

Future CAD Toolsets

- Technologies of future already being examined today.
- Admire the innovation and be thankful for government funding.
- Goal is to figure out way to cost effectively implement technology
  - Technologies that could revolutionize the consumer electronics market will not be ones that are expensive.
- CAD vendors of the future should be disencumbering their toolsets from today's reality.

In Conclusion

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