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## Computers the Size of An Atom Are Possible

### Micro Probes Are Not That Far Away!!

Researchers have now figured out how to use chemistry, not light, to make wires and switches as small as molecules. That is important since the process for making Integrated Circuits is dependant on the size of light waves to make current IC chips. Molecules are of smaller magnitude and would open new areas for the application of computer technology.

In mid-July 1999, Hewlett-Packard Labs and the University of California at Los Angeles made headlines with a breakthrough that seems like science

fiction - making integrated circuits for computers no bigger than molecules.

Currently, the on-off switches for computing are made by etching pathways with beams of light on silicon wafer

chips. But light has a wave length and cannot make anything smaller than that wave length.

*"In ten years potentially, we will have entire computers not just in your wrist watch, but woven into our clothing. Or a slurry of computers painted on your wall."*

- Phil Kueckes, Computer Architect, Hewlett-Packard Laboratories, July 1999.

He has found a way to use relatively simple molecules and have a computer program add the complexity. So, the manufacturing happens in two steps. You create a simple chemical structure - almost crystalline - and all of the complexity of a modern computer chip gets downloaded in the second step. We are on the verge of being able to create anything we want at



**The airlines are implementing new boarding procedures for their frequent flyers**

## Internet Is Capturing Information On You

### When You Are On The Internet NOTHING is Private

When you browse the Internet the sites you visit can and do capture information on you. One of the largest providers of ads on the Internet is DoubleClick. While in the course of delivering an ad to you, DoubleClick does not collect any personally identifiable information about you, such as your name, address, phone number or email address. Others do.

DoubleClick does, however, collect certain non-personally-identifiable information about you, such as the server your computer is logged onto or your browser type (for example, Netscape or

Internet Explorer). The information collected by DoubleClick is used for the purpose of targeting ads and measuring ad effectiveness on behalf of DoubleClick's advertisers and Web publishers who specifically request it.

In addition, in connection solely with the delivery of ads via DoubleClick technology to one particular Web publisher's Web site, DoubleClick combines the non-personally-identifiable data collected by DoubleClick from a user's computer with the log-in

name and demographic data about users collected by the Web publisher and furnished to DoubleClick for the purpose of ad targeting.

There are some cases when a user voluntarily provides personal information in response to an ad (a survey or purchase form, for example). In these situations, DoubleClick (or a third party engaged by DoubleClick) collects the information on behalf of the advertiser and/or Web site. This information is used by the advertiser and/or Web site so that you can receive the goods, services or information that you requested. Where indicated in some requests, DoubleClick may use this information in aggregate form to get a more

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the crystalline level. If they send pulses down the wires that have a big enough voltage, they can change the shape of the molecule and make it conduct or not conduct. If I use a smaller voltage, then I can actually run it as a computer based on what has been connected or not connected.

How far are we from having the ability to manufacture threads out of these integrated circuits and then be able to train them to do things like change color - a red shirt becomes a blue shirt; expand or contract the gap between threads so that the shirts provide more or less insulation? The applications of this technology could be endless.

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### **Is this reality?**

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Phil said that in just two years, he is going to take an area that is as small as two of the smallest wires anybody can make for an integrated circuit in the lab - and where two of those wires cross, they form a little tiny square. Inside of that square, we are going to build an integrated circuit that is as complicated as one that I actually used in 1970 to build computers out of.

It won't be a full computer chip, but it will be able to add one and one and get two, or store 16 bits, not 16 megabits. So, we believe we will have a real building block that is an actual integrated circuit far smaller than any transistor anybody else can build today.

Phil stated "What does that mean in ten years? Well, in ten years that means potentially that we will have entire computers - not just in your wristwatch, but woven into your clothing, or a slurry of computers painted on your wall."

The only limit to the application of this new technology is your imagination. Lets look at some potential applicaions.

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### **Living Walls**

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Talk about large screen TV. Think about painting a billboard sign then programming it to broadcast an animation. We now could have action-based graffiti on all of our freeways or traffic reports which are full images of the freeway ahead so that we know where we are going. How far away is that from the "holodecks" of the science fiction series of today?

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### **Electonic Wardrobes**

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Clothes could be made to suit, no pun intended, the personality of individuals. They could be programmed

to shrink to fit or expand base on our weight. They could be programmed to change color, texture, and style based on our mood or time of the day. Why buy six shirts when one will be able to generate them all.

The question of the power source is an interesting one. Will it be from a battery, solar, or some other source? Whatever it is, it will have to be practical, easy to use and require little if any maintenance.

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### **New Age Medicine**

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If these molecules could be programmed to do diagnostic testing and specific tasks like electrocution of cells, we could have a cure for many of the cancers that we have today. If this could be carried into a pill for say a specific virus, we could have a cure for HIV and the common cold.

As this happens, how will our governmetal agencies interact. How will the FDA respond when the first one of these design micro probes is submitted for testing? Will they be able to understand all of the ramifications of computers at the atom level and how they impact the body. These and many other questions will need to be answered in the next few years. This technology will advance and the key will be if it will be here or in some other country that will be more friendly to this technology.

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### **Manufacturing In Small Places**

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One technology feeds on another. Awhile back the head of Cray Research and the head of Apple Computers were on the same panel. During the discssion it came out that Apple was using the Cray Super Computer to design and manufacture its computer line. At the same time Cray was using the Apple to design its next computer. Using the same concept, these small computers will be used to manufacture the next generateion of micro devices. What will that bring us and how soon?

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### **Warning Labels**

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What warning labels will be required for these new computers? They will be small, reactive to some factor and be self contained. Keep in mind that awhile back the government mandated all cars have air bags. When they did they did not think the bags would kill childern sitting in the front seat. With this technology there will be a new set of issues that we can only imagine which will have to be addressed as it is moved out into the world.

The question will be, what will we have to be worried about and when? As with any new evolution, we need to really understand the total impact 

*(continued from page 1)*

precise profile of the type of individuals viewing ads or visiting the Web sites.

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### **Cookies and Opt Out**

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DoubleClick, along with thousands of other web sites, uses cookies. Here's how it works. When you are first served an ad, the ad provider assigns you a unique number and records that number in the cookie file of your computer. Then, when you visit a web site the ad provider reads this number to help target ads to you. The cookie can help ensure that you do not see the same ad over and over again. Cookies can also help advertisers measure how you utilize an advertiser's site. This information helps advertisers cater their ads to your needs. If you do not want the benefits of cookies, there is a simple procedure that allows you to deny or accept this feature.

While you can manually delete cookies, DoubleClick goes one step further by offering you a "blank" or "opt-out cookie" to prevent any data from being stored.

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### **Future Plans**

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On June 14, 1999, DoubleClick and Abacus Direct Corporation announced their plan to merge in the third quarter of 1999. Abacus currently maintains a database consisting of personally-identifiable information used primarily for off-line direct marketing. DoubleClick has no rights or plans to use Abacus' database information prior to the completion of the merger. Upon completion of the merger, should DoubleClick ever match the non-personally-identifiable information collected by DoubleClick with Abacus' database information, DoubleClick will revise this Privacy Statement to accurately reflect its modified data collection and data use policies and ensure that you have adequate notice of any changes and a choice to participate.

DoubleClick provides you with the option to opt out of data

capture. Go to the following site and set it so that your information is private. <http://ad.doubleclick.net/cgi-bin/optout?>

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### **FBI - Has a Super Snooper Box**

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In a recent case the FBI has disclosed that they have a "super snooper" box that not only can see the source and destination of data as it moves on the Internet, but also has the ability to capture all of the information and data that is being transmitted. The Wall Street Journal reported one case where the FBI had wire taps on the **INTERNET** connection of a suspect. They were able to capture copies of e-mail as well as other data that the suspect was getting and sending.


The suspect was in the business of "mining" data on individuals and selling it to others. He would get Social Security numbers, credit card and other "personal data". In turn he would sell the information. He did not have any idea that the FBI was able to capture 100% of the data. In the course of the investigation the FBI collected so much data that it filled a 20 by 20 foot storage room. This was an individual with a single PC.

Now if the FBI has the box, who else does as well? How was this suspect able to get so much information over the Internet for free?

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### **Schwab - Open System**

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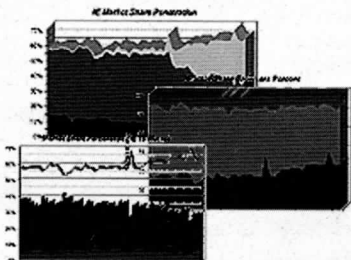
Put these two things together and look at what Schwab is doing to its customers. If a customer has more than one account and wants to link them so that they do not have to log on and off of them all the time, Schwab has a solution. They require the customer to enter his or her Social Security Number as the User ID over the internet. Now how safe do you feel about that. Granted you can have 128 bit security on the data but that may not be enough. My solution was to close my Schwab account. Others have as well. Who do you think is going to protect your privacy? Should you be concerned? 

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## Forecast for the National Information Technology Market

The job market is going to soften in the Spring -- Are You Ready?

by M. Victor Janulaitis  
Internet address: victor@psrinc.com

As people get ready for the new millennium, the economy is starting to show signs of softening. Interest rates in real dollars are now at an all time high and the engine of our economy is now starting to strain with the lack of qualified workers. On top of that, without a tax cut there is no source of funds for new investments.

All of this could be negated if there is some new factor that can drive the economy. Don't bet on it. With the election looming over the next year, the only thing that we can see is an anchor of no tax cuts and every politician offering one more program to give away. Think about the impact a \$65 billion dollar National Health Insurance program will have on every facet of the economy.

### Our world and 12/31 passing

As the Y2K projects end with a whimper with no failures in the United States, CFO's will see a positive impact on financial statements and will want to keep the lid on it for a quarter at least. Does this mean a recession? I do not know. What I do know is that job opportunities will be fewer and far between for at least the first few months of the new year. Too much supply and not enough demand.

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### What should you do?

If you plan on changing jobs do it now don't wait. If you do change jobs, make sure that you can get some kind of a guarantee to make sure they do not let you go if the economy goes south. That brings up the question that is often asked as to what is reasonable for you to ask for when you start a new job.

### Rules of thumb as you negotiate for a new job

There is never a better time to ask for benefits than when you are negotiating for the new job. What you want to avoid is getting into a negative situation right after you start a new job by going back and asking for some "additional" benefits not too long after you accept the position. Employers are much more amendable to you requests when they are trying to hire you. Use that to your advantage. Here is a punch list of things to consider:


**Documented Offer** – Is the offer with all of its "promises" in writing? You do not know how many people say, "...well when I was hired, you told me....". Make sure

that the offer and all benefits are documented.

**Term of Employment** – What guarantees do you have that the job will still be there after a merger? Are they an "employment at will" company? If they let you go, what will you get, 2 weeks pay or six months pay – Negotiate that now.

**Vacation Time** – How much do you get, when can you schedule it, and when are you eligible? Do you have a vacation that is scheduled around the holidays and can you get that time off?

**Bonus** – What are the rules? If you have a partial period, how is that going to be covered for you? Is there an opportunity to "review" the rules and progress as you get more experience with your new employer?

**Insurance and Retirement Programs** – What is the "actual" impact on your pay stub and year end tax return? What type of control do you have over the investments as well as the retirement funds? What is the guarantee that your new employer will not change the plan after you start? Remember what happened to the IBM employees when they "changed" the retirement plan retroactively and impacted all of their employees. 

Vic

Location	Prospects Short Term	Prospects Long Term
Northeast	Excellent	Good
Mid Atlantic	Good	Good
Southeast	Good	Good/Fair
South	Good	Good/Fair
Midwest	Excellent	Good
Southwest	Excellent	Good
West	Excellent	Good
Pacific Northwest	Good	Good
Best Location	West	Midwest