THE Neal Spelce AUSTIN LETTER

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P.O. Box 1905 / Austin, Texas 78767-1905 / 512-498-9495 / Fax 512-327-1976 / e-mail News@AustinLetter.com

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Dear Client:

A UTAustin computer scientist is working on an experimental computer chip so powerful and ambidextrous it is being called a supercomputer on a chip. It is hard to overestimate its possibilities, if it works as planned.

The leader of the design effort, **Steve Keckler**, hopes to have a prototype of the device finished in about a year. According to a lengthy article in *The Wall Street Journal*, if all goes as anticipated, Keckler expects a completed chip ready for commercialization about 2010.

What's so great about this chip? It will run at a top speed of 10 gigahertz and perform – get this – **one trillion individual computing tasks per second**! This is simply phenomenal. In comparison, Intel's current top speed Pentium 4 processor runs at 3.4 gigahertz and delivers 6.8 billion operations per second.

The speed is not all this experimental chip has going for it. As the *WSJ* points out, many semiconductors today are primarily one-trick ponies – specializing in particular tasks such as graphics or networking. Keckler's team is working on **an ambidextrous chip** that can be used in devices such as cell phones and digital music players, *or* it could serve as a powerful central processor in a desktop or other general purpose computer.

Scientists have reached the point of diminishing returns in terms of computing performance that can be gleaned by shrinking the size of conventional chips and speeding them up, reports the *Journal*. That's why the **ability of computer chips to morph and perform different functions would be considered a breakthrough**.

A US Department of Defense agency, The Defense Advanced Research Projects Agency (DARPA), is funding the effort. It funds a wide range of research projects, hoping to accelerate development of technology the Defense Department wants. DARPA is interested in polymorphous chips to bring versatility and longevity to field equipment. DARPA program manager **Robert Graybill** said he considers the preliminary work by Keckler's group (which includes collaboration with IBM) to be unique. The *WSJ* quotes Graybill as saying "**They've come up with a very, very innovative approach. It's probably the most ambitious project, (with) the highest risk and the highest (potential) payoff.**" This work is underway in Austin right now. There is more to this development. Please see the next item.

THE Yael Shelbee AUSTIN LETTER www.AustinLetter.com THE Yael Shelbee AUSTIN LETTER www.AustinLetter.com

So, how does this supercomputer on a chip work? **In plain language, you can think of it as many chips rolled into one**.

The research underway here in the Silicon Hills by UTAustin computer scientist **Steve Keckler**'s team, in collaboration with IBM, is focused on creating a chip that could contain many processing cores – as many as 16. According to *The Wall Street Journal*, this will enable a single chip to **perform multiple functions simultaneously**, while optimizing for each. Remember, conventional chips generally do one thing at a time.

In addition, this distributed architecture of Keckler's design would reduce what is known as "clock delays." We don't want to get too technical here but, simply put, because parts of the chip performing related functions are in close proximity on a single core, **the chips are sped up tremendously**. As a result, there is less "clock delay" when performing multiple functions.

"It's a novel way of potentially obtaining improved performance in existing technologies," **Mike Rosenfield**, director of IBM's Austin research facility, told the *WSJ*. He thinks it's **promising enough that at least portions of the design eventually will find its way into the mainstream**.

Keckler is reported to be enthusiastic about the prospects for commercialization, although he declined to estimate a potential market size. He does say **the completed chip will have broad appeal in the $200 billion chip industry**, and he and his team are debating whether to create a start-up around it, or partner with an existing chip-maker. Obviously, they are looking at a lot of different options.

While this is exciting to contemplate – especially as it may impact Austin's already substantial high tech reputation – we need a dose of reality as well. First of all, the US Department of Defense has **funded similar research projects at MIT, Stanford and USC** – though none has yet generated the excitement found for the UTAustin approach. Also, it's very early to determine the *extent* of any commercialization effort.

Rosenfield told the *Journal* **potential sales will depend on the degree of industry support it receives**, in terms of software to run on it and systems that incorporate it. And he said even though IBM is intrigued by the work so far, IBM's involvement beyond the current collaboration is uncertain.

Keckler further acknowledges the devil is in the details in terms of **translating his group's work so far from software simulation to actual silicon**. And he recognizes advances in chip manufacturing need to continue at their current pace so that much smaller transistors can be produced by 2010.

If all this happens, UTAustin could be the home of the next computer chip breakthrough.

THE Yael Selan AUSTIN LETTER www.AustinLetter.com THE Yael Selan AUSTIN LETTER www.AustinLetter.com

With interest rates rising, homebuilders and Realtors need to be more diligent in pursuing the ever-elusive homebuyer. There's a growing reservoir of potential buyers in the Austin area who, in the main, are being ignored. Here's a wake-up call.

A report recently released by TexasA&M's Real Estate Center suggests that real estate companies looking to expand into this growing population need to do their homework and not treat all homebuyers alike. To understand what a sea change this would be, just check out the ads for homes in the weekend *Austin American-Statesman*. **Most home ads are "one size fits all" – one ad appealing to all homebuyers**. There's a better way, according to this study.

All homebuyers are not alike, and we're not just talking about their financial capability. There are major differences in how certain groups approach the American Dream of owning a home. Understanding those differences – especially in today's (and the foreseeable future's) fastest-growing demographic — will lead to many more homes sold. **We're talking about Hispanics**.

> "A burgeoning Hispanic population offers a vast untapped market of future homebuyers," says **Gary Maler**, the Real Estate Center's Associate Director. "**Agents who understand the varying needs of their ethnic clients will be putting up more 'sold' signs in the future**."
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> This potential real estate market is sizable. The Center's survey indicates 48% of Hispanics who do not own a home say they are **likely to purchase a home in the next two to three years**. This is significant. So how do you reach this market? "Real estate agents who conduct business in Spanish have an advantage," Maler says. "Hispanics tell researchers they prefer or need to work with an agent who speaks their own language when engaged in real estate dealings."

Back to an earlier point: how often do you see real estate ads aimed at Hispanics? The study found that **certain homebuying behaviors and attitudes were common among the Hispanic respondents**. How often are those behaviors and attitudes taken into account in the ads, or even more to the point, in the way Realtors and homebuilders approach this sizable, ready-to-buy market? "Real estate agents should think in terms of family, friends and relationships when working with Hispanics," is just one piece of advice from Maler after analyzing the survey.

The survey was wide-ranging and tapped into all statewide ethnic groups for its results. We're focusing on Hispanics only because they are, by far, the fastest-growing ethnic group in Texas. Some of the other findings in the survey revealed that Blacks are more likely to view all aspects of the homebuying process as easy and are more likely to think using an agent is a good idea. Asians are more likely to pay more than their current rent to own a home. The study is chock full of tidbits such as this. But, **the bottom line is that a good boost in the overall Austin area economy (i.e. more homes sold) will occur if different behaviors and attitudes of ethnic groups were understood** – and taken into account — by those who are interested in providing a way for them to realize the American Dream of owning a home.

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New visa policies stemming from the terrorist attack on the US on 9/11/01 are having an impact in Austin. This has received very little public attention.

The number of applications from foreign students to attend UTAustin, as well as TexasTech and TexasA&M, has dropped from 25% to 40% from 2003, according to the State Comptroller.

Bob Crosier, director of international student and scholar services at TexasTech, blames the new 9/11 visa policies: "Post 9/11 legislation, policies and rhetoric have made the US appear to be an unwelcoming place for students and scholars."

The new visa security program focuses on 200 different scientific fields popular with international students. Under the new system, **the government performs an extensive background check that can take several months**. The UTAustin International Office says the heightened uncertainty of getting a visa discourages students from studying in the US.

Also, the federal government requires potential international students to provide financial proof they can sustain themselves before they are issued a student visa. **Jeff Cole**, a senior policy analyst for the Texas Comptroller, believes there may be a **misconception that taxpayers subsidize the studies of foreign students**. "The reality is quite the opposite," Cole says. "I think in most cases the tuition and fees that they pay are more than the cost of providing their university education; so these students may, in fact, help subsidize in-state students."

So, how much money does it take for an international student to attend UTAustin? The Institute of International Education estimates **it costs a foreign student $67,000 for tuition, travel, living expenses and personal expenses to spend a year at UTAustin**. With almost 5,000 foreign students attending UTAustin, their impact on the local economy is substantial.

As **Dr. Louis Overholster** grows older, he notices he has trouble recalling a variety of items. "You know, having a memory lapse can be a scary thing," he observed. "For instance, you could wind up seeing a Madonna movie twice!"

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Neal Spelce

Editor/Publisher