

National Semi CEO shifts from gadgets to megatrends

March 11 2009, By Steve Johnson

Founded in 1959, Santa Clara, Calif.-based National Semiconductor is one the oldest and best-established technology companies in Silicon Valley. But it's going through a big change under the leadership of its outspoken chairman and chief executive, Brian Halla.

The company, which makes integrated circuits that are used in everything from cars to cell phones, says its products help provide electronic gadgets with more vivid images, cleaner sound and longer battery life, among other benefits.

But Halla believes that National needs to focus more heavily on what he calls "emerging quality-of-life [megatrends](#)," such as improved [solar panels](#), innovative medical diagnostics and sensors that can spot terrorists trying to sneak into the United States or smuggle in weapons of mass destruction.

Halla is a veteran of chip companies Intel and LSI Logic, and joined National in 1996. He recently dropped by the San Jose Mercury News in his new all-electric Tesla Roadster and offered his vision of how [semiconductor companies](#) such as National can best position themselves for the future.

What follows is an edited version of his remarks to a group of the newspaper's reporters and editors.

Q. How is the economy affecting the [chip industry](#)?

A. While it's horrible that people are out of jobs, I think it's good for the nation long term; I think it's good for this industry, the semiconductor industry; I think it's good for the valley. I'm saying long term because we're a cyclical industry and the cycle we're in, I think, was over about five years ago. And what we needed was somebody to blow the trumpet and say, "Hey guys, we're at the right parenthesis of the last cycle, let's move on, drive new cycles, [new jobs](#)."

Q. What are you doing in that regard?

A. I'll try to stay away from shameless advertising. But two years ago we said, "Let's decrease our investment in gadgets and increase our investment in the new emerging megatrends and try to hit the sweet spot of those markets as they ramp up with the first electronic solutions." And one that we've already announced is SolarMagic.

Q. You introduced that technology in June for solar panels. How does that work?

A. What National did is develop technology that makes the panel more efficient. Panels work in a series. If one panel gets bird poop on it, the entire string of panels can lose up to 75 percent of their efficiency. We have technology that attaches to every panel. It's a module. It lets all the panels perform at their maximum and finds the bad one and takes it offline, routes around it, sees how much power it can contribute and adds that back in. We're getting about a 10 percent to 20 percent improvement in efficiency for an array.

Q. Any other applications for the technology?

A. SolarMagic is our first-generation product. We have a whole family (of products) that will be coming out that will include communication of panels, one to another, and optimization of the way electricity is used in

the house and then, ultimately, what's called community aggregation. That's where you can put one (solar) array in an apartment complex or in a housing development and it can service all of the houses in that development.

Q. The Tesla already uses some of your chips. Anything more you can offer electric cars?

A. The Tesla is rated at 250 miles round trip on a charge. The problem with that is if you want to go to Los Angeles you've got to find some place to have a 15-hour lunch. So our goal is to have that Tesla be able to make a round trip to Los Angeles before you have to recharge. We think we're well on the way. That's just optimizing the batteries and the way they work together, the same way we do with panel cells.

Q. What are some of the medical applications you're pursuing?

A. National has been the leader in temp-sensor technology. We sell those into PCs and what they do is tell us when to turn the fan on and off. But if you put a cluster of those into an array and run it over your heart, you can actually pinpoint any restriction in the arteries because the temperature would go up at those points. There's more coming. It turns out that cancer cells are warmer than non-cancer cells. So we're talking about diagnostics in the home for early detection of breast cancer, based on temperature signatures.

Q. You also believe your chips might be used to help spot dangerous material hidden in shipping containers by terrorists. How would that work?

A. Terrorists can bring explosives in, they can smuggle people in, all kinds of bad stuff. And nobody knows because you can't inspect every container. What we've done is we've developed sensor technology that

can sense the presence of different chemicals, a human being, or daylight if you open the container doors after they've been sealed. So it's going to just tell the dock inspector, "Check me, there is something wrong here."

Q. Anything else along those lines?

A. We've now figured out how to harvest energy so you can put video-camera sensors all over bridges and they can be really low-cost simple sensors that are powered by the vibrations of the bridge. If somebody comes walking along the bridge, the first sensor can wake up and say, "There's somebody out there." They create a perfect 3-D image of the person walking, send it to a supercomputer in Washington and check it against images of terrorists. If it doesn't match, they all go back to sleep. And let the guy keep walking on the bridge. If there's a match, you call an operator and say, "Hey, look at this."

Q. You mentioned that you have proposed that idea to the government. What was the response?

A. Well, our government (he laughs) has had a lot of trouble responding, haven't they? I mean, we're not getting a lot of help from our government. But these applications, obviously, are going to be very, very important in homeland security. Obviously, even given a recession, we all want to be safe.

Q. So you think there is a viable future for these mega-trend concepts?

A. I just think it's incredibly compelling and it's a chance for [Silicon Valley](#) to shine like it's never ever shined before. It's so exciting to me I wish I wasn't so close to the right parenthesis in my career. Not to mention I'd like another chance to earn some money again.

BRIAN L. HALLA

Age: 62

Birthplace: Springfield, Ill.

Position: Chairman and chief executive of [National Semiconductor](#)

Previous jobs: Executive vice president of LSI Logic. Before that, he held management positions at Intel.

Education: Bachelor's degree in electrical engineering from the University of Nebraska.

Family: Married, with two grown daughters.

Sources: National Semiconductor, Brian Halla

FIVE THINGS TO KNOW ABOUT BRIAN HALLA

1. He said being a first-time grandfather to twins "redefines joy and makes me realize how proud I am of my wife and daughters."
2. He raises Koi fish and owns two Labrador retrievers.
3. He holds multiple U.S. patents, one for chip technology that helps people recover their sight.
4. A Sudoku fanatic, he says his goal is "to someday beat my wife" at the

game.

5. He recently bought an all-electric Tesla Roadster, list price \$109,000.

Source: Brian Halla

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Distributed by McClatchy-Tribune Information Services.

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