

# INFORMATION TECHNOLOGY: Father knows best

When Mitch Rohde sought help in applying his company's signal processing technology to the auto industry, he went to his dad

By Tim Moran

Automotive News / September 22, 2003

Not every son looking for a part-time employee thinks of hiring his father. But when Mitch

Rohde sought automotive expertise for his technology startup firm, he knew his dad would be the ideal candidate.

Quantum Signal LLC of Ann Arbor, Mich., ([quantumsignal.com](http://quantumsignal.com)) specializes in signal processing - using computer software to analyze signals and sensor data.

Rohde and company co-founder William Williams, who had done seminal work in face- and speech-recognition security systems, thought that the mathematical analysis they developed for national security work had bigger industry applications. They believe their work might someday let a car recognize its driver by face or voice, eliminating the need for a key fob or security code.

But that would be in the distant future. A more immediate application has been in helping an automaker refine the sound of a closing car door.



Mitch Rohde, left, and his father, Steve Rohde, analyze signal and sensor data for automakers.

## Techbits

**Name:** Mitch Rohde

**Title:** Co-founder, Quantum Signal LLC

**Age:** 31

**Owns:** 1962 Ford Falcon

**Favorite Web sites:** Slashdot.org, fedbizopps.gov, cnn.com, ebay.com, google.com

**Name:** Steve Rohde

**Title:** Director of automotive operations, Quantum Signal LLC

**Age:** 57

That's where Rohde's father, Steve, comes in. The elder Rohde retired in 2002 after working for 31 years in General Motors' (gm.com) research labs and on systems engineering projects.

### High-quality 'clunk'

A harsh or tinny sound when the door closes can characterize an entire car as being cheap, even when the best materials are used.

Quantum Signal analyzed car-door closing noises for a car the company won't identify and discovered that multiple noises occurring at the same time made the door sound as though it were rattling upon closing.

Quantum Signal identified certain noises. By eliminating the bad ones, it defined how to make the same door offer a quality closing noise.

Such a task is surprisingly complex. Isolating the key noises from other sounds - say, the engine hum or the vibration of moving door hinges - is the strength of signal processing.

Mitch Rohde, 31, likens it to finding a needle in a haystack. His father calls it "virtual NVH" work. That's short for the noise-vibration-harshness identification that has become paramount in high-quality vehicles. Much of that work has been characterized by loudness definitions, not sound appeal, and analyzed by sound experts.

"You look at a lot of the NVH tasks: Build the vehicle, record the data, play back, modify, play back, modify - you keep doing the tests until the engineers agree you've reached the goal," Steve Rohde says. "People are only going to execute so many tests. After that they just sign off."

### GM background

Steve Rohde, 57, spent much of his GM career introducing computerized engineering and planning to managers more accustomed to hands-on crisis solving. His work was designed to make whole product lines better, rather than focusing on individual cars. "In the old days, we had a failure," Steve Rohde says. "When I hired in, we were blowing some engines up. The guys who figured out what was wrong, they were the heroes." Today's heroes are those who use technology to detect problems that car buyers would complain about, removing them early in the design process - things such as squeaks in the instrument panel.

### People processors

"People are very, very good signal processors physically," Mitch Rohde says. Quantum Signal, with only eight employees, is an example of a small business that has grown from research. The privately held company does not report its overall sales publicly, but automotive sales account for about 40 percent of business, Mitch Rohde says.

Mark Maynard, marketing manager of the University of Michigan Office of Tech Transfer, says that although Quantum Signal is not among the largest companies listed as success stories by his office, its steady automotive business and expansion into the biometrics field is admirable.

**Previous position:** Former technical director, synthesis & analysis, General Motors North American Operations  
**Owens:** Modified Model T pickup  
**Favorite Web sites:** Google.com, sae.org, asme.org, ebay.com, videomaker.com

### At a glance

**Who:** Quantum Signal LLC  
**What:** Signal processing technology and engineering consulting firm  
**Where:** Ann Arbor, Mich.  
**Employees:** 8

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The Rohdes and their partners see a huge market unfolding for their service. They want their company to be a full participant, not just a flavor-of-the-month software vendor.

Says Steve Rohde, "Just because you have a piece of software does not mean you have a capability."

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