

MICHIGAN BUSINESS REPORT



MICHIGAN ECONOMIC DEVELOPMENT CORPORATION

Michigan's Role in Homeland Security Technology



also inside...

*Technology
Tri-Corridor:
Michigan's
Newest Innovation*

*Fueling the Future
Building the
Creative Class*



*Mitchell Rohde
co-founder of Quantum Signal*

Everywhere we turn these days, electronic data and signals bombard us. Computers, cell phones and DVDs are sending out temperature readings, stock quotes, entertainment and much more. For these signals and data to be useful in our lives, we must be able to decipher the information, despite any corruption or interference in the transmission.

Quantum Signal of Ann Arbor cleans up the sounds, signals and data we come into contact with every day and is now unlocking the door to next-generation technology.

Processing Signals

Founded in 1999, Quantum is an engineering consulting firm specializing in advanced signal processing. In other words, it uses mathematical and statistical modeling techniques to extract important information from "noisy" data. The technology evolved from algorithms

Quantum Signal: Tunes Out the Noise, Delivers the Data

and tools developed in the fields of engineering, statistics, physics and mathematics. Company co-founder Mitchell M. Rohde, Ph.D., explains advanced signal processing this way: "Let's say you have a lot of data, such as the history of stock market prices, an acceleration signal measured off a car, or a heart signal from an EKG. What people really want to know are certain things about them. For instance, whether there's a problem with their heart. Whether the stock is going to go up or down. Or whether the car is entering a crash situation in which you need to deploy the airbag. It's getting exactly what you want to know out of the measurements you're taking."

Signal processing can be used to solve problems and improve current products and processes. Thanks in part to the Ann Arbor firm, advanced signal processing technologies are moving from the ivory tower to a wide range of applications in the commercial sector. The company services a variety of industries, including automotive, defense, power generation, medical, manufacturing, communications and biometrics.

Homeland Defense

With the nation's increased focus on homeland security, Quantum Signal's work in biometrics is very much in

demand. Biometrics is an automated method of recognizing a person based on physical or behavioral characteristics. "Things like face recognition, speaker verification and fingerprint recognition are obviously becoming more and more important," Rohde said. "The signal processing we do here is useful for doing things like verifying someone's identity based on how their face looks."

Federal, state and local governments, as well as the military and commercial companies, can find many applications for biometrics. The technologies can provide solutions to security breaches, financial transaction fraud, false IDs and other threats. Quantum Signal is currently working on a three-year biometrics project for the National Institute of Standards & Technology's advanced technology program. It was awarded \$2 million to develop and test advanced signal processing techniques in the areas of face recognition and speaker verification. The goal is to use the new technology to improve airport security through better screening, improve safety in automotive vehicles through better occupant sensing and enable faster automated verification in telecommunications. The company also plans on developing a more accurate technology that can handle

physical variations and "noise" that occur in real world situations, such as beards, eyeglasses, facial camera angles and poor cell phone reception.

Advanced Automotive Manufacturing

Signal processing techniques have proven valuable in the manufacturing, product design and engineering processes. They can enhance automobile designs by enabling features such as noise/vibration detection and anti-lock braking systems. Algorithms can distinguish a potentially dangerous crash situation from other non-harmful incidents to determine whether the airbag should be deployed. During manufacturing, signal processing can forecast impending machine tool failure and provide real-time product prognostics and diagnostics. The result: fewer damaged parts and minimal production downtime.

Last year the MEDC recognized Quantum for its successful commercialization efforts. It was one of 17 companies and individuals to receive awards for excellence in the fields of advanced manufacturing, information technology, life sciences,

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- 9 MICHIGAN AREA FIRST WEST MICHIGAN SUPPLIER DIVERSITY CONFERENCE
Holiday Inn Muskegon Harbor,
Muskegon
- 10 MICHIGAN MINORITY BUSINESS OWNERS/SOUTHEASTERN 14TH ANNUAL AWARDS BANQUET
Best Western Hotel and Conference Center, Ann Arbor
- 11-15 CORENET GLOBAL SUMMIT, 2003
Atlanta, Georgia
- 14 MICHIGAN ECONOMIC GROWTH AUTHORITY BOARD MEETING
MEDC Offices, Lansing
- 16 MICHIGAN STRATEGIC FUND BOARD MEETING
Victor Corporate Center, Livonia
- 16 LANSING DIVERSITY MATCHMAKER CO-SPONSORED BY THE MEDC, LANSING AREA PUBLIC PURCHASING GROUP, MICHIGAN MINORITY BUSINESS DEVELOPMENT COUNCIL AND MICHIGAN STATE UNIVERSITY
Kellogg Center, East Lansing
- 17 SAGINAW AFRICAN AMERICAN MINORITY BUSINESS ASSOCIATION ANNUAL MINORITY BUSINESS DEVELOPMENT MONTH LUNCHEON
Horizon Conference Center, Saginaw
- 21 SAGINAW COUNTY MINORITY BUSINESS DEVELOPMENT CENTER "GROWING YOUR BUSINESS IN CHANGING TIMES"
Saginaw Event Center, Saginaw
- 22 GRAND RAPIDS AREA CHAMBER OF COMMERCE 2003 MINORITY BUSINESS CELEBRATION
Amway Grand Plaza Hotel
Grand Rapids
- 23 BOOKER T. WASHINGTON BUSINESS ASSOCIATION 73RD ANNIVERSARY & AWARDS BANQUET
Ambassador Ballroom, Marriott Hotel,
Detroit
- 24 CHALDEAN CHAMBER OF COMMERCE ANNUAL AWARDS BANQUET
Southfield Manor, Southfield

NOVEMBER

- 5-6 17TH ANNUAL UNIVERSITY OF MICHIGAN/URBAN LAND INSTITUTE (ULI) REAL ESTATE FORUM
"Main Street Mania: Along Woodward Avenue and Beyond"
- 13 DETROIT REGIONAL CHAMBER OF COMMERCE SMALL BUSINESS CONFERENCE
Henry Ford Event Center, Dearborn
- 18 MICHIGAN ECONOMIC GROWTH AUTHORITY BOARD MEETING
MEDC Offices, Lansing
- 20 MICHIGAN STRATEGIC FUND BOARD MEETING
Victor Corporate Center, Livonia
- 21 SILVER BELLS IN THE CITY
Downtown Lansing
For more information contact the Greater Lansing Convention and Visitors Bureau at (517) 487-0047 or www.lansing.org.
- 22 INTERNATIONAL FESTIVAL OF LIGHTS
Battle Creek
For more information call the Greater Battle Creek/Calhoun County Visitor and Convention Bureau: (800) 397-2240.

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venture capital and angel investing. Selections were based on innovation, success in the marketplace and contributions to Michigan's economy.

Tech Tri-Corridor

A combination of factors convinced Rohde and partner William J. Williams, Ph.D. to base their company in Michigan. Rohde is a Michigan native who earned all of his degrees from the University of Michigan. Williams is professor emeritus of electrical engineering and computer science at U-M.

"We decided to stay in Ann Arbor—particularly Ann Arbor—because there's a wealth of resources in terms of technical talent," Rohde explained. "It's a thriving research environment. There are a lot of companies with potential crossovers with us."

Indeed, the synergy created among the companies in the Technology Tri-Corridor (TTC) has set the stage for Quantum's growth. Rohde says his company's strengths play right into the TTC's three industries—life sciences, advanced automotive technologies and homeland security. "I think that Michigan is obviously an industrial and research development center. And these particular three fields are really excellent areas... in terms of economic development, overall technology and commercialization."

Rohde sees big things in the future for Quantum Signal, especially in the emerging area of biometrics. His hope is to continue to build on the services the company currently provides, while launching more and better products in the automotive and homeland defense markets.