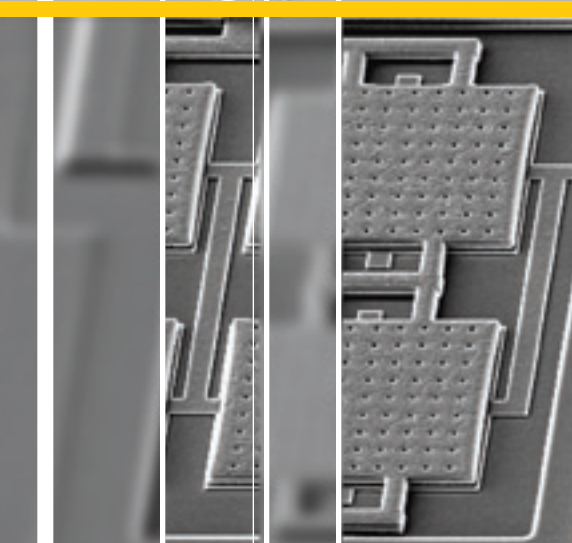


MEMS Device

Team Mobius: (from left) Michael McCorquodale (Ph.D. Candidate EECS), Jeffrey Wilkins (MBA 2002) and Jim Vincke (MBA 1985)



SUCCESSFUL SPIN-OFF: Mobius Microsystems Leverages Its Michigan Connections

THE GRAY CRYSTALLINE SEMICONDUCTOR CHIP THAT UNIVERSITY OF MICHIGAN DOCTORAL FELLOW MICHAEL S. MCCORQUODALE HOLDS IN HIS OUTSTRETCHED HAND IS TINY—NO BIGGER THAN THE TIP OF A BALLPOINT PEN. LOOSELY DESCRIBED AS A “ON-CHIP CLOCK GENERATOR FOR SYNCHRONOUS PROCESSORS,” ITS ELECTRONIC CIRCUITRY AND MICROSCOPIC MECHANICAL DEVICES, EMBEDDED ON A SILICON SUBSTRATE, ARE NEARLY INVISIBLE TO THE NAKED EYE. YET, MCCORQUODALE’S VISION FOR THE TECHNOLOGY APPLICATION THAT HE AND HIS RESEARCH ADVISOR, DR. RICHARD B. BROWN, CO-DEVELOPED AT THE UNIVERSITY OF MICHIGAN IS ANYTHING BUT DIMINUTIVE.

“This semiconductor chip has the potential to help reduce the size, power consumption and cost of many electronic devices, including cell phones and PDAs, and to spur the development of new products, such as wristwatch cameras,” explains McCorquodale, who is the chief executive officer of Mobius Microsystems. “It is the first step in a complete portfolio of technologies that will integrate many key functions into a single semiconductor chip.” McCorquodale and Brown, a professor of electrical engineering and computer science at the College of Engineering, co-founded Mobius in 2002 with the aid of veteran entrepreneur James Vincke, MBA ’85, and University of Michigan Business School MBA students Jeffrey Wilkins and Wade Rushing.

Three years ago, however, the Mobius on-chip-clock was little more than a concept with great potential. Today, it is well on its way to becoming a commercially viable product and another in the long list of successful technology spin-offs from the University of Michigan. A major catalyst for the company has been the high-level business-development assistance it has received from the Samuel Zell & Robert H. Lurie Institute for Entrepreneurial Studies, the University’s Office of Technology Transfer and the College of Engineering’s Technology Transfer and Commercialization Office. These, together with other University-affiliated groups, have helped to shape the company’s goals—and put those goals within reach.

“I had been in an electrical engineering curriculum for my entire life, and I knew nothing about business development,” McCorquodale explains. “The Institute played an instrumental role in every aspect of our development. It provided the resources that made it possible for a student from the College of Engineering with very little knowledge of emerging business to develop a complete, practical business skill set and to launch a company.”

Today Mobius is one of a handful of companies at Michigan where students and faculty from different disciplines are working together on the commercialization of emerging technology. In this way, it serves as an important role model for technology transfer at the University.

“Interdisciplinary collaboration is one of the most important elements for developing a healthy, active entrepreneurial community at the University of Michigan,” McCorquodale says. “Entrepreneurial-track courses are taught in the Business School, and student organizations

such as the Entrepreneur and Venture Capital Club encourage people to share information and resources, and to recruit others for new ventures. Together they create a very productive environment for entrepreneurship.”

McCorquodale has utilized the resources of the Business School and the Zell Lurie Institute in a number of ways. Through an MBA-level business-development course, he learned how to put together a comprehensive business plan. His due diligence paid off, enabling him to win his first business-plan competition. Things kicked into high gear a year later when the current team was assembled, bringing together the technology vision with the business expertise and execution.

Over the past three years, Mobius has raised money to support its operations by winning more than \$130,000 in business-plan competitions and grants, including \$20,000 from the Dare to Dream Grant Program. The company also received more than \$50,000 worth of in-kind services. Tim Petersen, the Institute’s former managing director, and Paul Kirsch, program manager, provided coaching as the Mobius team polished its business plan and presentation. Kirsch also traveled with the team to competitions, and the Institute subsidized related expenses.

At the College of Engineering, Tim Faley, then director of the Technology Transfer and Commercialization Office, helped McCorquodale and Brown file patents for their developed technology. (Faley has since left that post to become the managing director of the Institute.) Karen Studer-Rabeler, assistant director of new business development in the University’s Office of Technology Transfer, familiarized the Mobius team with the technology-transfer process and the procedure for licensing their technology for commercial use. She also provided feedback on their business plan and attended preliminary meetings with prospective investors.

Michigan connections played out in other ways as well. In early 2002, Jim Vincke, who holds two mechanical engineering degrees in addition to an MBA from the University of Michigan, joined the company as CFO. “I was looking for something new after working at an Ann Arbor-based software company for three years, and I was very intrigued by Mobius’ technology,” he says. “It was an area that interested me and offered a lot of promise.” Vincke’s combined background in technology and business enabled him to formulate a financial strategy for the company, which hopes to generate \$20 million in licensing revenue for its chip design by 2007. “Mobius is a team effort, and I wear a lot of different hats that go beyond the traditional CFO area,” he says. “That’s true with most small entrepreneurial ventures.”

An interest in entrepreneurial opportunities also attracted Jeff Wilkins, a recent MBA graduate, to the Mobius team. “I grew up in an entrepreneurial family and always had a strong interest in entrepreneurship and technology,” Wilkins explains. “I chose Michigan for my MBA because it offered the most well-rounded business education and an opportunity to get an understanding of the whole picture, which is critical for an entrepreneur.” Two years ago, he spotted an e-mail posting from McCorquodale that asked for help in writing a business plan for a start-up company. Intrigued by the technology, Wilkins responded and began working with the company in a business-development role.

Last summer, Mobius participated in the Zell Lurie Institute’s Marcel Gani Internship Program. This enabled the company to pay Wilkins and Wade Rushing for the entire summer. “They hit the streets, calling potential customers to ask about their interest and to determine where our technology would fit in their product line,” McCorquodale reports. Wilkins remained with the company and is now the chief operating officer.

Through the Zell Lurie Institute, Mobius has not only expanded its network within the entrepreneurial community but also has received leads on potential investors. “We have been positively received, but we want to bootstrap Mobius for a while before seeking outside investment,” McCorquodale says. The company’s goal is to make a first sale before engaging an angel or institutional investor.

However, many hurdles still remain. A licensing agreement with the University must be finalized. Prototype chips built separately by IBM Microelectronics and Taiwan Semiconductor Manufacturing Co. must be tested and refined. A new office in Ann Arbor must be opened and staffed. Marketing and financing strategies must be put into action.

“We’ve got a lot to do, but I’m not sure we could have done any of this without the Zell Lurie Institute,” McCorquodale says.

Richard Brown, Professor
University of Michigan College of Engineering EECS



Mobius Microsystems

Business Plan Competition Awards 2001 - 2003

2001

Great Lakes Entrepreneur’s Quest
Phase One Winner (\$2,500)

2002

Great Lakes Entrepreneur’s Quest
Phase One Runner-up (\$5,000)

2002

Indiana University Spirit of Enterprise
1st Place (\$10,000)

2003

University of Michigan Pryor-Hale Business Plan Competition
Best Business Opportunity and Best Written Plan (\$11,500)

2003

University of Texas MOOT Corp Competition
NASDAQ Challenge Winner, Runner-up Run-off (\$1,000)

2003

Ohio State University
1st Place (\$100,000 in cash and services)

2003

University of San Francisco
International Business Plan Competition
1st Place (\$10,000)

2003

MBA Jungle Business Plan Competition
1st Place (\$15,000 in cash and services)

2003

Great Lakes Entrepreneur’s Quest
Phase Two Runner-up (\$25,000)

University of Michigan Awards

2003

Jeff Wilkins
University of Michigan Business School
Entrepreneur of the Year Award

2003

Mike McCorquodale
College of Engineering
Entrepreneur of the Year Award