



# IMPACT

## Wallet, Cell Phone, ECG monitor?

Powerful universal wireless platforms make biomedical and other diagnostic tools available anytime, anywhere.

The heart palpitations you've been experiencing have you worried, particularly because of your family's history of heart attacks. You visit the emergency room, and the doctor calmly applies a small bandage to your chest, capable of monitoring your vital signs, keeping track of you while you're in the hospital, and sending all of that data wirelessly back to the nursing station. Science fiction? — No, just the next step in medical diagnostics, and a small example of how microsystems are changing the world around us in the form of miniature tools with grand designs.



Sensors to monitor patients various vital signs can be sent through a wireless transmitter, such as a cell phone, to monitor a patient, send data and even signal an alarm when required.

Microsystems are playing an increasingly large role in invention, to meet the growing global demand for smaller, faster and less power-hungry devices—from diagnostics and environmental monitoring to the many devices that entertain us each day. To help address this need, CMC Microsystems is working with lead researchers and the resources of the National Design Network to create multi-sensor micro-platforms that are lightweight, fast, cost-effective and adaptable.

CMC Microsystems CEO, Ian McWalter, says that the development and miniaturization of universal wireless platforms is key to the success of diagnostic tools and other applications for our future. "A ubiquitous platform that can be produced at a low cost and operated at low power levels offers numerous benefits to researchers in countless ways—from health care to environmental science," he says.

In the case of vital signs monitoring, sensors to monitor heart rate, respiration and temperature could be fitted within a bandage that might be worn for up to a week, even in the shower. The device can monitor the patient, send data (via a transmitter such as in a cell phone) and can even signal an alarm should readings change significantly. The bandage is ideal in a hospital setting but could also be used in retirement homes, by paramedics responding to a call, or in remote communities where health care specialists are not available.

Researchers will use CMC's wireless platform solutions to combine multiple sensors of varying types within one device to increase efficiency, making such devices ideal for a broad range of disciplines—from biomedical tools to monitor aircraft fuselage structures or atmospheric changes in the environment. They are also designed to operate using a low amount of power to make them both cost-effective and sustainable. "Ideally, these devices turn on only when needed," says McWalter. "And they should be able to scavenge small amounts of power from other sources—using the sun, wind and even body heat to support the main power supply."

CMC's mission to build partnerships between government, industry and educational institutions is perhaps best embodied by these platforms, which provide a much-needed 'leg up' in research. "We are dedicated to helping Canada become the leader in the microsystems field—in both industry and university research," says McWalter. "Wireless platform technology provides an important tool to move us that much closer to our goals." *cmc*