

Virginia's Center for Innovative Technology

INNOVATIONS

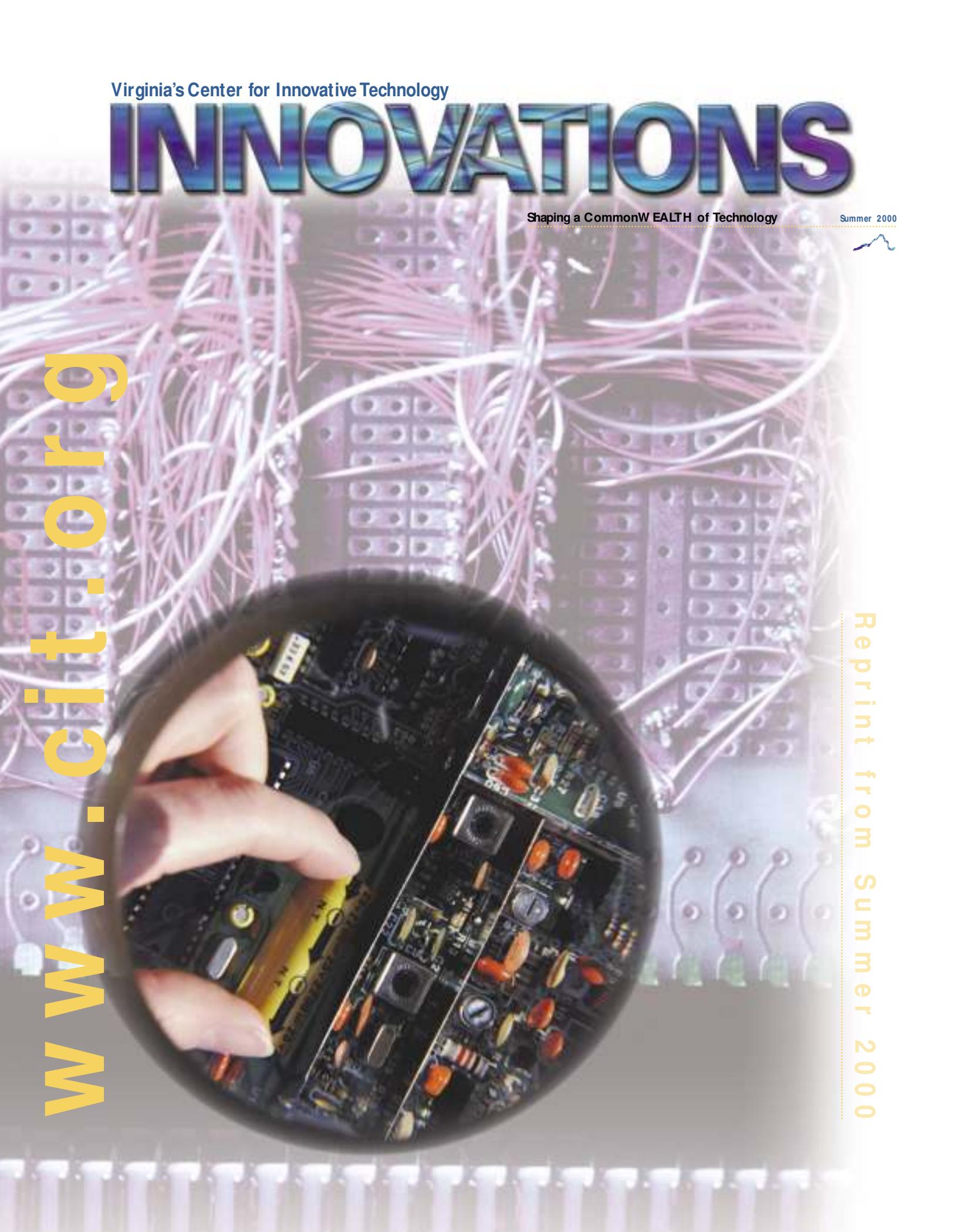
Shaping a CommonW EALTH of Technology

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For MAS, Ingenuity Is the Lifeblood of Success

www.rals.com

For most start-ups, the first five years are usually the hardest. It's just understood that you can't achieve success overnight. Apparently no one mentioned that fact to Greg Menke and Kurt Wassenaar, of Charlottesville-based Medical Automation Systems (MAS). The entrepreneurs have grown their company from two employees in 1995 to more than 100 today. With its focus on health care data management and point-of-care services, MAS introduced a proprietary, network-based software system that enables laboratory technicians at a central site to automatically download blood glucose analyses performed at remote locations.

The Remote Automated Laboratory System (RALS) software, developed by three professors at the University of Virginia's School of Medicine, is licensed from the university's Patent Foundation. The method for acquiring data is simple and fast. A nurse, while on her regular rounds, retrieves a sample of a patient's blood. Blood samples then are analyzed in a small, handheld device, which tracks each

device that provides an early warning system of sepsis in babies in the newborn intensive care unit (NICU).” Sepsis, a serious bacterial infection of the blood stream, is an enormous problem in NICUs. Infants in the NICU generally have underdeveloped immune systems, which leave them prone to developing the infection. The problem of sepsis in newborns prompted Dr. Randall Moorman, a cardiologist at UVA, and his wife, Dr. Pamela Griffin, a UVA neonatologist, to study the issue in search of a solution.

Certain subtle yet distinct patterns in the changes of a baby's heart rate are indicators that something could be wrong. Drs. Moorman and Griffin discovered that by monitoring infant heartbeats and analyzing the heart rate with complex mathematical algorithms, they could determine the onset of sepsis in newborns. Using the technology process developed by the husband and wife team, MAS is working to transfer their process to software. Once the process has been assimilated, a medical device will be created to monitor infants for sepsis. Drake pointed out that the device will contain a historical information database of previous cases for comparison with a baby currently being monitored. “The database will contain information on babies that are sick, well and at points in between. The device then performs complex mathematics, compares the results to the database and estimates the level of risk for the infant,” Drake explained. If the device determined that the baby was at risk, it then would produce a warning noise or light.

CIT regional director Terry Woodworth is enthusiastic about MAS' latest research. “Creating a device that provides a non-invasive, continuous, real-time monitoring system to detect sepsis in infants is a project CIT is excited to be involved with,” Woodworth said. MAS' latest effort is likely to provide numerous benefits for hospitals, caregivers and patients. While the infant mortality rate from sepsis is not relatively high, the development of an early warning system could reduce the mortality rate even further. There is also the added benefit of reducing the costs associated with sepsis in newborns as well as the non-invasive factor. “CIT has been a wonderful partner in this venture,” Drake said. “Without CIT, we wouldn't be as far along as we are. It's not just the financial support that CIT provides but also their belief in our work, ability and desire, which is critical to our success.”

Through strategic partnering, hard work and expansion, MAS has achieved an incredible amount of success in a very short time. Like Drake, MAS vice president Wassenaar believes CIT's assistance has been critical to the company's success. “CIT has been there for us so many times in the past. We want to go beyond simple data collection to using the data to make diagnoses, and CIT's support is helping us achieve that goal,” he said.



Medical Automation Systems (MAS) is creating a device that provides a non-invasive, continuous, real-time monitoring system to detect sepsis in infants.

sample that the nurse retrieves. The nurse then connects the handheld device to the RALS system and transmits the stored blood test results to a central laboratory for further analysis. Analysis of the blood samples then is recorded directly into a patient's electronic record for safekeeping. The overall process is efficient and accurate. More importantly, however, lab results are available much faster than in the past - a feature that is especially critical when the condition of a patient is subject to rapid change. MAS president Menke emphasized the benefits of RALS. “When the turnaround time for lab tests is reduced to minutes rather than hours, and patient records are updated automatically with that information, then caregivers are able to concentrate more fully on clinical issues. It's a win-win situation for all involved.”

Expanding on its expertise in data management, MAS has successfully applied for and won several Virginia's Center for Innovative Technology (CIT) Challenge Awards. The company's most recent award was for the development of a product called HRC. “The ultimate goal of this research,” said Dr. Keith C. Drake, the company's HRC product manager, “is to create a commercial medical



For more information on MAS and its products, visit MAS' website at <http://www.rals.com>. MAS also can be contacted via email at mas@rals.com or by telephone at 888-971-7953 or 804-971-7953.