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Gene Codes software IDs 9-11 victims, draws interest from nations

BY BRIAN HAMILTON
bhamilton@bdwbiz.com

Gene Codes Corp. of Ann Arbor has spent the last year and a half developing forensic software that owner Howard Cash hopes no one will ever have to use again.

But the software Gene Codes created to identify the remains of World Trade Center attack victims using DNA analysis is taking on new importance as the United States contemplates war with Iraq.

Concerns about possible terrorist reprisals have prompted 11 countries to contact Cash about his software, called Mass-Fatality Identification System, or M-FISys.

Gene Codes plans to take the unusual step of issuing licenses that cover an entire country. In this way, the software can become a national resource and be used for responding quickly to any kind of disaster, from a terrorist attack to an earthquake.

Cash, who recently was named the 2002 Entrepreneur of the Year by the New Enterprise Forum for this work, also plans to donate the software to groups like the International Commission on Missing Persons, the organization in Kosovo that is trying to identify victims of war from 1991-99 in the former Yugoslavia.

The software has become an unqualified success at its grim pursuit. To date, 1,469 of the 2,792 people listed as missing in the World Trade Center attacks - or 6,289 of the 19,935 separate human remains recovered - have been identified, thanks largely to Gene Codes' work.

Dr. Robert Shaler, chief forensic biologist for the New York City medical examiner's office, said the software is a critical tool that has become so effective through its many revisions that it is being used almost exclusively in the identification effort.

"Without it, we may not have been able to do this work," Shaler said.

Yet the Sept. 11 project has created an array of business and technical challenges for Cash and his company, partly because it has been an all-consuming endeavor over the last 17 months for

nearly all of Gene Codes' 13 engineers.

Gene Codes specializes in DNA sequencing software, named Sequencher, that is used primarily by research universities as well as drug and biotech companies. The 10-year-old company had $5 million in revenue last year and has been growing at an annual rate of about 17 percent, Cash said. However, Sequencher was created for research, not as a forensics tool for a disaster. While there are elements of Sequencher in the M-FISys software, the new software was essentially created from scratch, Cash said.

"There was never a reason for anybody to build anything with this kind of breadth before," said Cash, who was approached by Shaler to help with the Sept. 11 work.

"My first reaction was that we couldn't do it because we didn't have the capacity," Cash said. "But Dr. Shaler is a very persuasive man. I came back to my staff and told them we were totally overmatched for this. We're going to be working on this seven days a week for over a year, with incomplete product specifications, changing priorities, and impossible deadlines because everyone needed it before this happened."

And the pressure to not make mistakes is tremendous, he said.

"The worst thing we could do is identify someone incorrectly and have to go back to the family and tell them the funeral they had didn't count," Cash said.

"I can't really communicate what the pressure was like. We have all kind of acclimated to it a little bit. But, especially at the beginning, it was a scary time. I gave everyone on my staff a veto on this project, but everyone wanted to work on it."

Since signing the three-year contract with New York City, Cash has nearly doubled his staff to 30 people.

Cash also set up a wholly-owned subsidiary, Gene Codes Forensics Inc., to protect the assets of the main company. He realized early on that he couldn't predict how people might react if something were to go wrong in such an emotional situation.

The contract, he said, has covered his costs, but the impact on his business has been substantial. No one has been able to spend the time to upgrade the Sequencher software, the prime source of his company's profits.

"It's axiomatic that (software companies) don't make money on software, they make it on upgrades," Cash said, acknowledging a significant impact on his bottom line.

"It's very hard to pull anyone off the World Trade Center effort (just) because we have financial needs," Cash said. "It's hard to imagine saying to a (victim's) family member that we have to slow down and it may take a couple of extra months for you to have the funeral because it's bad for business that we keep going this way.

"There's no moral way to say that."

Almost every company working in the identification effort has been faced with problems they've never encountered before, Shaler said.

Victims' families have contributed genetic samples from personal effects, such as toothbrushes, and those sample have to be

analyzed and stored. The remains, especially now, are often nothing more than a bone fragment or a tooth. Sometimes they have deteriorated so badly from exposure to fire, heat and water - nearly 18 months after the attacks - that only small pieces of DNA can be isolated.

The software still is a work in progress. Using a relatively new software development technique called "extreme programming," Gene Codes tweaks the software every week based on changing needs; then Cash or another employee delivers it to New York.

One of Gene Codes' strengths, said Dr. James Schumm of the Bode Technology Group of Springfield, Va., a company that analyzes bone fragments, is its ability to take new DNA isolation technologies developed during the project and incorporate them into the software.

"It's clear to me that they've developed new technologies, and they've been so responsive," Schumm said. "It's pretty amazing what has been done under the most challenging circumstances you can imagine."

Brian Hamilton covers technology and finance for Business Direct Weekly.

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