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Looking to join up

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By Jeff St. John Herald staff writer

A tention Tri-City high-tech startups -- Uncle Sam wants your technology.

Take the Army's Future Force Warrior Technology Program, a five-year, \$250 million effort to "rebuild the soldier head to toe" with enhanced equipment like climate-controlled uniforms and helmets integrated into wireless communications networks.

It's a major reconfiguration of the way soldiers will fight future wars, said Dutch DeGay, equipment specialist for the program -- and the Army is going to America's small businesses to make it happen.

"The Army is changing its contracting process to allow for the insertion of technology that can be found in the private sector," he said.

On Thursday, DeGay will pitch his idea of a small-business-friendly Army via videoconference at a Massachusetts Institute of Technology forum at Columbia Basin College in Pasco. Coming from an institution known for its ponderous bureaucracy and tight relationships with giant defense contractors, it may sound like hype.

But there are quite a few Tri-City high-tech companies that would say otherwise. Devices to detect airborne biological or chemical contaminants, engines that generate electricity from the heat of military field kitchens, mobile solar-powered alert sirens -- all these are being developed by Tri-City businesses through military contracts or grants.

In fact, military spending has played a key role in helping some of these companies bring their technology to the market.

"To tell you the truth, the defense contractors have pursued us as partners," said Patricia Irving, chief executive of Richland-based InnovaTek. "I suppose they've made strategic decisions that the hot way to get new technology into the system is to establish relationships with small business."

Since 1997, InnovaTek has received more than \$6 million in federal money, much of it from the Department of Defense, to design and build air samplers to test for airborne contaminants, as well as for potential hydrogen fuel cell technologies.

Doing business with the military does present its unique challenges -- Irving has had to receive government security clearances for some of the work she's done, and with soldiers as the end users, the military has little tolerance for technology that doesn't work perfectly the first time around.

To get the military to use InnovaTek's BioGuardian air sampler, for example, "You have to go to places like Dugway Proving Ground in the (Utah) desert, in the middle of a windstorm, and drop it from a helicopter -- and it's got to work at the push of a button by a soldier who's had no training," she said. After all, "That's what would happen in Iraq."

But in many ways, Irving said, it's a lot like working with any customer -- maintaining relationships and giving them what they want.

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"We maintain close relationships with our contacts," she said. "These are the techno-nerds in the military, and there are a lot of them. They want the best technology in the world, and they pride themselves on going out and finding it."

"They may not say, 'We need technology X,'" she added. "But they will say, 'We need a long-term power source that weighs less than a lithium ion battery, so soldiers can remain longer in the field.' How you fulfill that need is up to you."

The U.S. Department of Defense has a lot of needs. In fiscal year 2003, it awarded \$202.6 billion in contracts, with Washington receiving \$3.2 billion.

Of course, "The big contractors get the big bucks," Irving said. "What we get is a very tiny little micro-drop in the bucket."

But those droplets can be a flood for a fledgling business -- like Kennewick's Safer Systems.

"I was lucky the Army knew what I was doing," said Jeff Whattam, company president. What he does is emergency communications systems, designing software and building trailer-mounted, solar-powered sirens that are in use at Hanford and at the Umatilla Chemical Depot.

In late 2001, Whattam got a call from U.S. Central Command, where someone had heard about Safer Systems mobile sirens from one of Whattam's contacts in the Federal Emergency Management Agency.

"They used our units to secure the Kandahar Air Base in Afghanistan," he said, ordering about half a dozen sirens. Now Safer Systems is talking with the military about incorporating infrared cameras into the mobile sirens, for double duty as enemy detection systems.

"It was a new application for old technology," he said. If the relationship with the military continues, "Given the number of bases around the world, we could approach revenues in the millions."

The ultimate goal of many contractors is to get their products on the "standard equipment lists" used by the military, said Mike Powell, senior research engineer for MesoSystems.

"It takes a lot of work to get on that list," he said. His Albuquerque, N.M.-based company was founded by former Pacific Northwest National Laboratory engineers in Kennewick to develop technology to detect airborne pathogens like anthrax.

Now hundreds of its handheld BioCapture detectors are in use, some by the U.S. military, he said. But getting to that point wasn't easy.

"It would be really tough, even if you have a great widget, to go to the military and say, 'Start buying these,'" he said. "You need to work closely with the end-users -- try to get some of your products in the hands of soldiers and then their feedback."

To get to that stage, MesoSystems, like other Tri-City companies, started made military connections by getting the military to pay for its research.

"That's the ideal way for small businesses to enter into contractual arrangements" with the military, said Terry Doherty, PNNL's director of Department of Defense programs.

There's no lack of funding for military-focused research. In fiscal year 2004 the Defense Department budgeted \$64.7 billion for research, development, testing and evaluation -- a figure set to increase to \$68.9 billion next year.

At the same time, overall federal research and development spending has shifted to defense and homeland security efforts, according to a January 2004 funding forecast by Battelle, the company that runs PNNL.

Federal grants known as Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) offer one method that MesoSystems, InnovaTek and other Tri-City firms have taken advantage of, Doherty said.

"Those are fairly easy to qualify for," he said, and they allow businesses to prove their mettle to the military. A typical SBIR grant provides \$100,000 for a first phase, and another \$780,000 if the company can prove the idea works.

Kennewick-based Stirling Technology Co. recently won such a \$780,000 grant to build a prototype military field kitchen that incorporates one of the company's Stirling engines to generate electricity from the kitchen's heat source.



Like many other companies, Stirling has used these military contracts to perfect a technology it eventually intends to bring to a broader market, be it the military, other government agencies or the private sector.

"Our ultimate goal is to deliver lots of units," Irving said. "Once we've developed the fundamental technology and proven the prototype works in a defense environment, then we look for a large defense contractor as our partner."

Doherty agreed that the major defense contractors have farmed out more work to small businesses, as well as to national labs like PNNL, which is working on fuel cell microtechnology and lightweight heating and cooling technologies that could be incorporated into soldiers' uniforms and equipment to deal with 100-plus degree temperatures in the field.

That's also the method being used by the Army's Future Force Warrior program, DeGay said.

The overall project is being run by a consortium headed by defense giant General Dynamics. But the program has used SBIR grants to pay for small businesses developing conductive textiles that could replace electric cables for personal communications equipment, and has tapped a Cambridge, Mass., snowboard helmet company for advice on designing the Future Force Warrior's helmet.

"People shouldn't think the Army is this big beast that's not worth working for," he said. "That's not the case anymore."

The "Technology and the Future Warrior: Protecting Soldiers in the 21st Century" forum is 4 to 5:30 p.m. Thursday at the Columbia Basin College library, Room L-102, Pasco.

To register by Wednesday, send an e-mail to gracie_downard@pnl.gov or call 375-2803. For more information, visit the Web site www.pnl.gov/edo/events/warrior.stm.

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