

**Mesa firm lands Air Force contract**  
Taylor, Tribune

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US Positioning Group LLC, a Williams Gateway Airport-based technology company, has won a contract from the U.S. Air Force that could eventually be worth millions of dollars to develop new control centers for unmanned aerial drones.

In phase one of the contract, the group will use its cognitive engineering expertise to help design the centers' structure, information displays, communications and information sharing to increase the effectiveness of the seven-member teams that will operate the centers.

"We are entering a whole new world," said Steven Shope, president and founder of US Positioning. "With cognitive engineering, we are treating man and machine as one integrated entity."

Unmanned aerial vehicles, or UAVs, played important roles in the wars in Afghanistan and Iraq and in the war against terrorism. They are seen as having a bright future in America's military arsenal.

The US Positioning contract is part of an effort by the Air Force to improve the command and control of UAVs as they become increasingly complex and more capable. In the past, remotely controlled drones have been used primarily for intelligence gathering, sending up sensors and cameras to scout enemy positions. Lately they have been upgraded to carry missiles and bombs that can also be used to directly attack enemy targets.

The center the company will help design will control the Predator, a drone built by General Atomics Aeronautical Systems, but it could be adapted for other UAVs, Shope said.

Each Predator is controlled from a ground station, which is essentially a trailer that contains four people and is usually located at the drone's launch site. The ground stations are controlled from an air operations center, a big room far from the battlefield that contains hundreds of officers who manage the air war using information from many sources.

During the Iraq war, the Air Force operated such a center in Qatar, a small country on the Persian Gulf far from the Iraq battleground.

To relieve the workload on the central air operations center, the Air Force wants to develop an intermediate control center called a Predator Squadron Operations Cell, which would be operated by seven or eight military personnel who would oversee four or more Predators and their ground stations.

It is those squadron operations cells that US Positioning will help design, Shope said.

"The idea is to distribute functions from the air operations center to cells closer to the battlefield," he said. "Managing personnel out of the air operations center is getting too chaotic."

To design the cells, the Mesa company will consider such factors as the types of information that operators need to do their job, how they can most effectively communicate with each other, how much work each operator can handle and how an operator can best make decisions with conflicting information.

"The system needs to be designed with the human in mind so it can be used easily without complex training programs," Shope said.

US Positioning doesn't expect to build the actual cells once the final design is determined, but the company could produce software for the system, he said.

Shope, who earned a doctorate in physics from Penn State, has been involved in cognitive engineering research since he founded the company in 1987 in Albuquerque, N.M. He moved the company in January along with 30 employees to Williams Gateway Airport after his wife, Dr. Nancy Cooke, a cognitive engineering professor, was offered a position at the adjacent Arizona State University East.

Shope and Cooke have collaborated on much of their work and are in the process of forming a nonprofit Cognitive Engineering Research Institute at Williams Gateway, which will be a joint venture of ASU, US Positioning and the U.S. Air Force Research Lab, which also is located at the ASU East campus.

The idea will be to use the expertise of the three entities in engineering, psychology, sociology and even anthropology to develop command and control technologies for the government and private sector. Shope sees a strong homeland security market — for example, emergency operation centers for airports.

"The institute will do things that we as a business could not do," he said.