ON THE HOMEFRONT - IMPACT OF WAR
A Center of Security
More research money is flowing into USC's School of Engineering

By MICHAEL THURESSON Staff Reporter

The 2001 terrorist attacks got C.L. Max Nikias thinking about technology.

As dean of University of Southern California's School of Engineering, Nikias figured years of tight funding for aerospace and defense were about to end and that USC had an opportunity to attract a flow of research money for homeland security.

"After 9/11, I had to position USC to get the rebound," said Nikias in an interview last week. "The Department of Defense wants not only research but ties to companies that build systems for them."

In the ensuing 18 months, USC has become a breeding ground for the kind of technology that's envisioned for many homeland security and defense projects, drawing more interest from both government and private funding sources than any other local university.

"USC's engineering school is the only university we are looking at," said Edmund B. Woollen, vice president of homeland security at Raytheon Co. "Max and I have a good relationship and we want to bring them into our family."

Last year, the engineering school received $120 million in research funding, up from $92 million in 2000. Much of that increase came from the Defense Department, which contributed $70 million in 2002. An upcoming round of funding from the newly formed Department of Homeland Security is expected to increase this number.

"Max is trying to get the aerospace industry directly involved in deciding how the school spends its resources. I have not seen this done at other schools," said Alexander G. Livanos, vice president of program operations at Northrop Grumman Corp. in Los Angeles.
Defense roots

Born on Cyprus, Nikias is a graduate of National Technical University in Athens. He received his masters of science in 1980 and doctor of philosophy in 1982 from the State University of New York in Buffalo.

He has been an awarding-winning engineering professor at USC since 1992, receiving a teaching award from the National Technological University in 1993 and earning recognition from several national entities for research on wireless communications and electrical signals.

Nikias, who became dean in 2001, previously was the founding director of the engineering school's Integrated Media Systems Center, a National Science Foundation-funded research center focused on three-dimensional simulation modeling of disaster scenarios that has caught the eye of many defense contractors.

In recent years, USC has become a repository for unusual programs. It's the only engineering school, for example, to offer a master's degree in cybersecurity. It also hosts the Mann Institute for Biomedical Engineering and the Institute for Creative Technologies, in a partnership with the Army.

U.S. News & World Report has ranked its graduate program, with 2,400 students, eighth in the nation for two years in a row.

The Department of Homeland Security, started in January with a $37 billion budget, is expected to help fund commercialization of the school's research, but it has been slow to provide funds so far. This may be one reason Raytheon, for one, hasn't yet entered into a formal arrangement with the engineering school.

Neither Nikias nor Woollen would comment on potential financial terms of any projects.

Currently, the school is simulating urban disaster situations, such as the spread of an airborne virus, bomb explosions or water contamination. If the project were to move forward, Raytheon would use USC's technology to train the Los Angeles fire and police departments, public utilities and other civic workers.

Already, the school's Institute for Creative Technologies, housed in Marina del Rey, is using special effects from L.A.'s movie industry to help the Army simulate battles. It was launched two years ago with a $45 million Army grant.

"USC is drawing more interest from the defense industry than UCLA because it is more willing to try new things," said Philip E. Coyle III, senior advisor at the Los Angeles office of the Center for Defense Information, a Washington research institute.

UCLA's Henry Samueli School of Engineering and Applied Science received $60 million in research funding in 2002, about half of what USC took in. Three-quarters of UCLA's funding came from the federal government.

UCLA's strengths in sensor technology and biological technologies have found strong interest for defense applications, while USC has played off its strength in information sciences, said Vijay Dhir, dean of UCLA's engineering school.

He noted that UCLA's engineering school received $20 million from the Defense Advance Research Projects Agency last year for a wireless sensor technology to be used in warfare. The sensors, called magnetometers, are the size of a housefly and can detect the presence of tanks, trucks or a soldier with a rifle.
A similar effort at USC is being used on the battlefield in Iraq. Defense Department-funded wireless communications technology is being used to detect land mines in Iraq. It is faster and more reliable than existing technology and will become a “commercial force” within three years, Nikias predicted.