

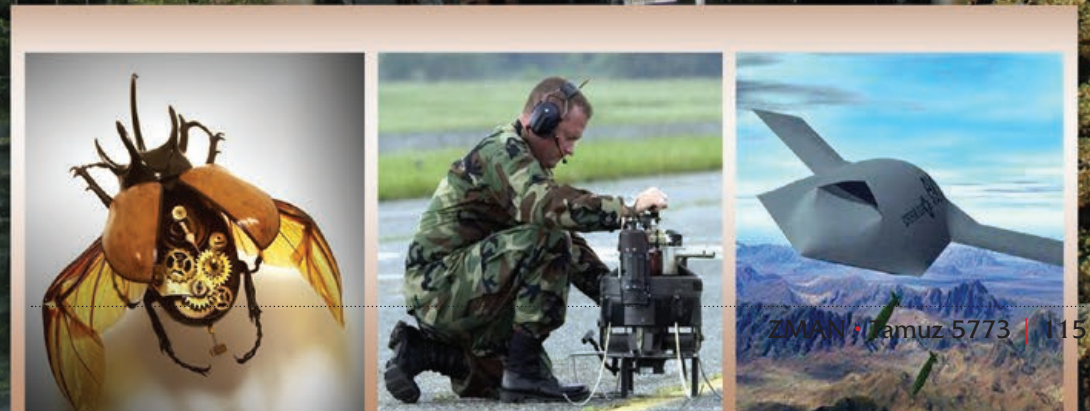
- Yakov M. Wagschal

DARPA

America's Top-Secret Weapon

Question: Which entity in America develops the most advanced and applicable technologies that most of us depend on and use every day?

Answer: Not Apple or even Microsoft. Not Google, Boeing or Intel. The answer is a US federal government agency known as DARPA, an acronym for Defense Advanced Research Projects Agency.



Many of our modern world's leading technologies trace their development to the work of DARPA, the Defense Advanced Research Projects Agency. This is the Pentagon's research arm that develops revolutionary technology for the advancement of the US military.

The Defense Department has an annual budget of over \$75 billion earmarked for technology research and development. Of that, DARPA receives \$3 billion. That may sound like a princely sum, but it's far below what GM and Ford spend each year to develop new car models. Microsoft and Cisco spend more annually to develop new computer systems, and Merck spends more on developing new drugs.

Nevertheless, DARPA succeeds where others do not because it is not in the business for profit. How lucrative or risky an investment is does not play a significant role in DARPA's executive decision making. In short, it can afford failure.

This freedom to pursue investments for which private companies are afraid to take the risk has resulted in some startling inventions that are applied in everyday life. Of course, the original purpose of these inventions was military. But when an idea proves its worth, and releasing it does not pose a security threat, DARPA willingly shares the fruits of its labor with the greater American public.

These inventions include such advanced technologies as the GPS, the miniaturized cell phone, the mouse, the touch-screen, computer operating systems and much more. Many of these technological breakthroughs are often part and parcel of everyday items that, unbeknown to us, were originally part of a military research project. For instance, Apple's new smartphones offer an advanced application called Siri. Siri is a personal attendant that answers questions, offers recommendations and carries out orders. Not only that, but Siri learns from experience. It adjusts its activities and sets its priorities to better match the user's preferences over time. Siri, in turn,

is a descendant of a technology known as CALO, a system financed by DARPA in 2003, to assist communications for soldiers in battle.

DARPA, of course, took CALO much further and even evolved part of it later into something called BOLT (Broad Operational Language Translation). One of the most debilitating difficulties US soldiers face while serving abroad is the inability to communicate effectively with locals. (CIA agents and members of elite Special Forces are generally trained in several languages. This greatly increases their ability to communicate with locals when necessary. For the average soldier, however, this requirement is too restrictive.) It is nearly impossible to let the residents of an occupied area know that you are their friend if you cannot converse with them. The inability to communicate also inhibits gathering critical intelligence information about the enemy.

BOLT seeks to overcome this problem by translating the soldier's English (or any other language) into any local dialect worldwide. It will also translate the local speech back into English for the user. Of course, a simple software translator can do a basic job for most major languages. However, this will often result in an unintelligible garble or the loss of significant nuances. The purpose of BOLT is to accurately translate even idioms and unusual expressions in a manner that will make sense to the user and his listener.



DARPA developed a translator to allow American servicemen to communicate instantly with locals in a foreign land.

BOLT technology would also allow instant translation of e-mails and text messages into the language preference of the recipient, from wherever he may be. Such technology promises to transform the civilian world as well.

History of DARPA

The story of DARPA begins in 1957, when the United States became entangled in the "space race" against the Soviet Union. On Friday, October 4, 1957, America was caught by surprise when the Soviets successfully launched Sputnik I, the first artificial satellite.

America panicked. The Soviets had beaten the US into space. If they could win the space race, maybe they could win the weapons race too. Maybe they could even use space as a platform for launching attacks. That would give the Soviets the upper hand and perhaps allow them to force their political views on the Western world.

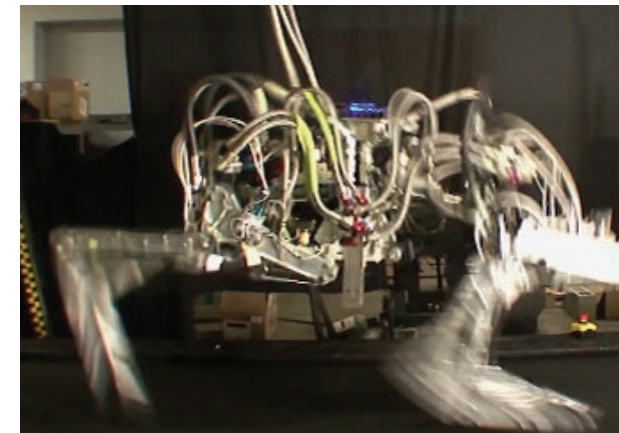
President Dwight D. Eisenhower, the WWII hero who led Allied forces to victory in Europe, took decisive action in response to this threat. In February 1958, he authorized Defense Secretary Neil H. McElroy to create a new agency named ARPA (the forerunner of DARPA) as a special division within the Pentagon. This new agency would be under the direct supervision of the Secretary of Defense. Its goal would be to ensure that America would not be taken by surprise again.

McElroy assembled a group of America's top scientists. He charged them with the task of: 1) helping America reach space, 2) protecting America from Soviet missiles, and 3) uncovering Soviet nuclear tests.

ARPA proved itself almost immediately. On July 26, 1958, America launched the Argus satellite to discover whether nuclear testing could be detected from the atmosphere. Next, ARPA developed rockets that had the power to launch astronauts to the moon. As soon as ARPA's space program achieved its goals, however, it was transferred to the auspices of the new civilian space agency, NASA. This



DARPA-developed robots are intended to assist troops by carrying heavy supplies and equipment in the field.



This robot, created by DARPA, can match the speed of the world's fastest land creature, the cheetah.



Drawing of Sputnik I, the world's first artificial satellite. Inset: Russia issued postage stamps in honor of Sputnik's deployment.