Written by Administrator
Wednesday, 10 February 2010 00:00

We were fortunate to find DARPA's FY 2011 Presidential Budget Request file while searching the DARPA website. DARPA, of course, is the Department of Defense's Advanced Research Projects Agency, where the future of U.S. military technology is funded today. Let's be clear: just because DARPA asks for funding is no guarantee the agency will receive it. That said, looking at the budget request (**lin k here**
) is a glimpse into the future.

The budget request discusses cognitive computing systems and machine intelligence, network-centric warfare technology and "materials and biological technology." It's science fiction, except that it's a list of the military research areas of today. For example, DARPA is requesting $53.8 million for –

… investigating and developing the intersections of biology, information technology and micro/physical systems to exploit important technological advances and leverage fundamental discoveries for the development of new technologies, techniques, and systems of interest to the   DoD. This research is critical to the development of rapid responses to engineered biological warfare agents, radically new
biomolecular
computers, and novel materials for the
DoD
. Programs in this project will draw upon the information and physical sciences to discover properties of biological systems that cross multiple scales of biological architecture and function, from the molecular and genetic level through cellular, tissue, organ, and whole organism levels. This project will develop the basic research tools in biology that are unique to the application of biological-based solutions to critical Defense problems.

Here's another project description that caught our eye: "The program will also create technology to reliably integrate nanoscale and microsystems payloads on insects that will extract power, control locomotion, and also carry
DoD
relevant sensors."
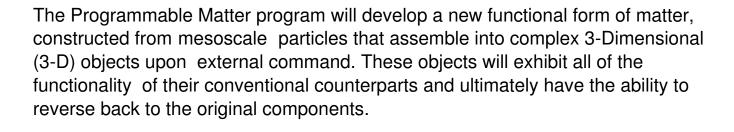 Talk about bugging the opposition forces!

Or how about this one?

One focus is on techniques that can efficiently process and 'understand' massive data streams. Deeply layered machine learning engines will be created that use a single set of methods in multiple layers (at least three internally) to generate progressively more sophisticated representations of patterns, invariants, and correlations from data inputs. These will have far-reaching military implications with potential applications such as anomaly detection, object recognition, language understanding, information retrieval, pattern recognition, robotic task learning and automatic metadata extraction from video streams, sensor data, and multi-media objects.

Or this one?

The Programmable Matter program will develop a new functional form of matter, constructed from mesoscale particles that assemble into complex 3-Dimensional (3-D) objects upon external command. These objects will exhibit all of the functionality of their conventional counterparts and ultimately have the ability to reverse back to the original components.

In other areas, we learned that DARPA recently "Devised full characterization and manipulation of entangled quantum systems," and also that NACHOS stands for " Nanoscaled
Architecture for Coherent Hyper-Optic Sources."

This one might scare you.

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The Magneto Hydrodynamic Explosive Munition (MAHEM) program will demonstrate compressed   magnetic flux generator (CMFG)-driven magneto hydrodynamically formed metal jets and self-forging penetrators (SFP) with significantly improved performance over explosively formed jets and fragments. Explosively formed jets (EFJ) and SFP are used for precision strike against targets such as armored vehicles and reinforced structures. MAHEM offers the potential for higher efficiency, greater control, the ability to generate and accurately time multiple jets and fragments from a single charge, and the potential for aimable , multiple warheads with a much higher EFJ velocity, hence increased lethality precision, than conventional EFJ/SFP.

There is more, of course, roughly 500 pages of discussion. What brought us to the budget request was some research on the ArcLight Program. This is not the Vietnam-era program that used B-52's.   Instead, it is an attempt to design and build a long-range hypersonic strike weapon. The concept uses the Navy's SM-3 Block II booster stack and a hypersonic glider, and should be "capable of being launched from a Mark 41 Vertical Launch System (VLS) tube."
  In other words, DARPA is researching dropping a 100-200 lb. payload from up to 2,000 miles, at hypersonic speeds. If one were to speculate that the MAHEM warhead (described above) might be mated to the ArcLight missile that would be a formidable piece of ordnance, indeed.

Glimpse the (Unclassified) Future in DARPA's FY 2011 Budget Request

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In **this article** , Aviation Week not only mentions the ArcLight program, but other projects within the DARPA budget request. We don't think AW's summaries are a cool as the actual   D
ARPA
descriptions, though.

Check out the budget request. See the future of warfare.