

<http://www.nytimes.com/2012/09/27/us/us-officials-opening-up-on-cyberwarfare.html>

Cyberwarfare Emerges From Shadows for Public Discussion by U.S. Officials

By SCOTT SHANE

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WASHINGTON — For years, even as the United States carried out sophisticated cyberattacks on Iran’s nuclear program and the Pentagon created a Cyber Command, officials have been hesitant to discuss American offensive cyberwarfare programs openly. Since June, in fact, F.B.I. agents have been investigating leaks to The New York Times about the computer attacks on Tehran.

But the reticence is giving way. The chorus of official voices speaking publicly about American cyberattack strategy and capabilities is steadily growing, and some experts say greater openness will allow the United States to stake out legal and ethical rules in the uncharted territory of computer combat. Others fear that talking too boldly about American plans could fuel a global computer arms race. Next month the Pentagon’s research arm will host contractors who want to propose “revolutionary technologies for understanding, planning and managing cyberwarfare.” It is an ambitious program that the Defense Advanced Research Projects Agency, or Darpa, calls Plan X, and the public description talks about “understanding the cyber battlespace,” quantifying “battle damage” and working in Darpa’s “cyberwar laboratory.”

James A. Lewis, who studies cybersecurity at the Center for Strategic and International Studies in Washington, says he sees the Plan X public

announcement as “a turning point” in a long debate over secrecy about cyberwarfare. He said it was timely, given that public documents suggest that at least 12 of the world’s 15 largest militaries are building cyberwarfare programs. “I see Plan X as operationalizing and routinizing cyberattack capabilities,” Mr. Lewis said. “If we talk openly about offensive nuclear capabilities and every other kind, why not cyber?”

Yet like drone aircraft, which similarly can be used for both spying and combat, American cyberattack tools now are passing through a zone of semisecrecy, no longer denied but not fully discussed. President Obama has spoken publicly twice about drones; he has yet to speak publicly on American cyberattacks. Last week, at a public Cyber Command legal conference, the State Department’s top lawyer, Harold H. Koh — who gave the Obama administration’s first public speech on targeted killing of terrorists in 2010 — stated the administration’s position that the law of war, including such principles as minimizing harm to civilians, applies to cyberattacks.

In August, the Air Force raised eyebrows with a bluntly worded solicitation for papers advising it on “cyberspace warfare attack capabilities,” including weapons “to destroy, deny, degrade, disrupt, deceive, corrupt or usurp” an enemy’s computer networks and other high-tech targets.

And a few weeks earlier, a top Marine commander recounted at a public conference how he had used “cyber operations against my adversary” in Afghanistan in 2010. “I was able to get inside his nets, infect his command-and-control, and in fact defend myself against his almost constant incursions to get inside my wire,” said Lt. Gen. Richard P. Mills, now deputy commandant of the Marine Corps.

Cyberwarfare was discussed quite openly in the 1990s, though technological capabilities and targets were far more limited than they are today, said Jason Healey, who heads the Cyber Statecraft Initiative at the Atlantic Council in Washington.

“Our current silence dates back 8 or 10 years, and N.S.A. is a big reason,” said Mr. Healey, who is working on a history of cyberwarfare.

The National Security Agency, which plays a central role in Cyber Command, traditionally breaks foreign codes and eavesdrops on foreign communications; it is among the most secretive agencies in government. Years ago it pioneered the field of cyberespionage: breaking into foreign computer systems in order to collect intelligence. The same skills and reflexive secrecy of spies carried over to cyberwarfare, Mr. Healey said. American officials have long preferred to talk cyberdefense, leaving the attack side in the shadows.

The increased candor recently about cyberoffense results not from a policy change, officials say, but from an inevitable acceptance of attacks on computer networks as a standard part of military and intelligence capabilities. The fact that dozens of Beltway contractors see cyberwarfare as one of the few parts of the defense budget that are likely to grow is also a factor.

When Darpa announced a “proposers’ day workshop” for its Plan X program, the “overwhelming response from industry and academia” led the defense research agency to expand the event to an extra day, the agency said in a statement [attached below]. (A Darpa spokesman declined to comment further on Plan X.)

Just as drone-fired missiles have never been a secret to those on the ground, so cyberattacks have consequences that cannot be hidden, even if their origin may be initially uncertain. The computer worm called Stuxnet, devised by the United

States and Israel to destroy Iran's nuclear centrifuges, was quickly detected by computer security experts when it infected networks around the world in 2010 — but remains highly classified.

Hence the Cyber Command legal conference, which avoided specific cases while dwelling on principles. Mr. Koh, of the State Department, told the conference that the United States carries out “at least two stages of legal review” on cyberwarfare operations — considering whether the law of war prohibits the use of “new weapons” altogether and, if not, how the law governs their use in “each particular operation.”

Matthew Waxman, a law professor at Columbia and former Defense Department official, said speaking openly about cyberwarfare policy was important because it allowed the United States to make clear its intentions on a novel and fast-emerging form of conflict.

Because both the Bush and Obama administrations were slow to speak publicly about their use of armed drones, Mr. Waxman said, “they ceded a lot of ground to critics to shape the narrative and portray U.S. practices as lawless.” As a result, he said, “the U.S. is trying to play catch-up, giving speech after speech, saying ‘We abide by the law.’ ”

Now, Mr. Waxman said, because the United States “occupies a position of advantage on offensive cyber capabilities, it should seize the opportunity to lay out a set of rules for itself and others.”

That is a worthy goal, said Daryl G. Kimball, executive director of the Arms Control Association. But he said that came with a hazard: more talk about the United States' cyberwarfare capabilities might prompt other countries to step up

their own programs at a time when the world is “on the cusp of a cyber arms race,” he said.

Mr. Kimball said Darpa’s sweeping public statement about the goals of its Plan X for cyberwarfare might be a case in point.

“It makes it sound like the U.S. is preparing to be able to wage a full-out cyberwar,” Mr. Kimball said. “Those kinds of statements could come back to haunt the U.S. down the road.”

Special Notice

Plan X Proposers' Day Workshop

DARPA-SN-12-51

September 5, 2012

Amendment 1



Defense Advanced Research Projects Agency
675 North Randolph Street
Arlington, VA 22203-2114

DARPA-SN-12-51
Foundational Cyberwarfare (Plan X)
Proposers' Day Workshop, ~~27 September 2012~~ 15 and 16 October 2012

The Defense Advanced Research Projects Agency (DARPA) Information Innovation Office (I2O) will host a Proposers' Day in support of the anticipated Plan X Broad Agency Announcement (BAA).

Due to an unanticipated and overwhelming response from industry and academia, DARPA has rescheduled the Plan X Proposers' Day Workshop. The Proposers' Day Workshop will be held on ~~27 September~~ 15, 16 October 2012 at the **DARPA Conference Center, 675 N. Randolph Street, Arlington, VA** from **0900 to 1600 EDT**. **The second day will be a repeat of the first day to accommodate the remaining attendees.** ***There will be an unclassified session in the morning and a classified SECRET session in the afternoon. Attendance at the afternoon session is limited to individuals with US DOD SECRET clearances or higher. Neither session is open to the general public, foreign nationals, or members of the media.*** It is anticipated that the Plan X BAA will be released by the end of September in **October** 2012.

PROGRAM OBJECTIVE AND DESCRIPTION

The objective of the Plan X program is to create revolutionary technologies for understanding, planning, and managing cyberwarfare in real-time, large-scale, and dynamic network environments. Plan X will also conduct novel research into the nature of cyberwarfare and support development of fundamental strategies and tactics needed to dominate the cyber battlespace. *The Plan X program is explicitly **not** funding research and development efforts in vulnerability analysis or cyberweapon generation.*

DARPA seeks innovative research in four key areas in support of Plan X:

- *Understanding the cyber battlespace:* This area focuses on developing automated analysis techniques to assist human operators in planning cyber operations. Specifically, analyzing large-scale logical network topology characteristics of nodes (i.e., edge count, dynamic vs. static links, usage) and edges (i.e. latency, bandwidth, periodicity).
- *Automatically constructing verifiable and quantifiable cyber operations:* This area focuses on developing high-level mission plans and automatically synthesizing a mission script that is executed through a human-on-the-loop interface, similar to the auto-pilot function in modern aircraft. This process will leverage formal methods to provably quantify the potential battle damage from each synthesized mission plan.
- *Developing operating systems and platforms designed to operate in dynamic, contested, and hostile network environments:* This area focuses on building hardened "battle units" that can perform cyberwarfare functions such as battle damage monitoring, communication relay, weapon deployment, and adaptive defense.
- *Visualizing and interacting with large-scale cyber battlespaces:* This area focuses on developing intuitive views and overall user experience. Coordinated views of the cyber battlespace will provide cyberwarfare functions of planning, operation, situational awareness, and war gaming.

A system architecture team is also sought to lead the end-to-end Plan X system development. This will include working with Plan X performers to develop the standard system application programming interfaces, data format specifications, and performer integration schedule. The system architecture team will also be responsible for purchasing Plan X system infrastructure and hardware.

The Plan X program is structured around an on-site DARPA cyberwar laboratory where performers will continuously integrate developing technologies into the end-to-end Plan X system. It is fully expected

that performers have off-site development facilities, with key integration personnel at the on-site laboratory. The Plan X development approach and schedule will use agile development principles.

The goals of the Proposers' Day Workshop are: 1) to educate proposers and government partners on Plan X concepts and key technology areas, 2) to demonstrate key Plan X concepts to attendees using interactive technology prototypes, and 3) to encourage and promote teaming arrangements among interested organizations. The Proposers' Day Workshop will include program overview presentations, in-depth technical area briefs, and an interactive prototype session of DARPA funded concepts.

TENTATIVE AGENDA

~~Thursday, 27 September~~ **Monday, 15 October and Tuesday, 16 October** 2012

Registration: ~~0900~~ **0830** – 1000 EDT

Presentations/Discussions: 1000 – 1200 EDT and 1300 – 1600 EDT

~~Friday, 28 September~~ **Wednesday, 17 October** 2012

Scheduled one-on-one meetings with the Program Manager:

~~1000~~ **0900 – 1230** EDT for 15 October attendees and **1330 – 1700** ~~1600~~ EDT for 16 October attendees.

* You must register at the Proposers' Day Workshop. Slots are on a first come first serve basis. These one-on-one meetings will be held at 675 N. Randolph Street, Arlington, VA.

REGISTRATION INFORMATION

The afternoon session will be classified and therefore attendance is limited to individuals with US DOD SECRET clearances or higher. Participants MUST register no later than 1200 ET on 18 September 2012 on the Plan X registration website: <https://www.schafertmd.com/darpa/i2o/planx/proposerday/>. Any remaining availability will be on a first-come-first-serve basis. Registered attendees will be sent an email to the registered email address specifying which day to attend. If you previously registered at the link above, you will be contacted by the email address provided to confirm which day to attend.

Attendance will be limited to a maximum of 3 individuals per organization. All attendees will be required to present government-issued photo identification upon entry to the event. Attendance at the afternoon session requires one of the attendees to be a security representative. All other attendees MUST be technical.

Attendance at the Proposers' Day is voluntary and is not required to propose to subsequent solicitations on this topic. The Proposers' Day does not constitute a formal solicitation for proposals or abstracts. DARPA will not provide reimbursement for costs incurred to participate in this Industry Day. Interested parties to this notice are cautioned that nothing herein obligates the Government to issue a solicitation.

For attendees wishing to take part in the classified afternoon session, a Visit Request must be submitted no later than 1200 EDT on 18 September 2012 to:

DARPA

Attn: Plan X Proposers' Day Workshop

675 N. Randolph Street

Arlington, VA 22203

Visitor Control Center Phone #: 703-528-3902

Fax to: 703-528-3655 OR JPAS to SMO Code DDAAUS4

Purpose of Meeting: Plan X Proposers' Day Workshop

POINT OF CONTACT: All questions regarding the Proposers' Day Workshop should be sent to planx@darpa.mil.

Special Notice

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DARPA-SN-12-51

August 17, 2012



Defense Advanced Research Projects Agency
675 North Randolph Street
Arlington, VA 22203-2114

DARPA-SN-12-51
Foundational Cyberwarfare (Plan X)
Proposers' Day Workshop, 27 September 2012

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The Proposers' Day Workshop will be held on **27 September** at the **DARPA Conference Center, 675 N. Randolph Street, Arlington, VA** from **0900 to 1600 EDT**. *There will be an unclassified session in the morning and a classified SECRET session in the afternoon. Attendance at the afternoon session is limited to individuals with US DOD SECRET clearances or higher. Neither session is open to the general public or members of the media.* It is anticipated that the Plan X BAA will be released by the end of September 2012.

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