AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

COUNTERTERRORISM TECHNOLOGY: PICKING WINNERS AND LOSERS

HEARING

BEFORE THE

SUBCOMMITTEE ON NATIONAL SECURITY, EMERGING THREATS AND INTERNATIONAL RELATIONS

OF THE

COMMITTEE ON GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

ONE HUNDRED EIGHTH CONGRESS

FIRST SESSION

SEPTEMBER 29, 2003

Serial No. 108–114

Printed for the use of the Committee on Government Reform

Available via the World Wide Web: http://www.gpo.gov/congress/house
http://www.house.gov/reform

U.S. GOVERNMENT PRINTING OFFICE

92–393 PDF WASHINGTON : 2004

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2250 Mail: Stop SSOP, Washington, DC 20402–0001

COMMITTEE ON GOVERNMENT REFORM

TOM DAVIS, Virginia, *Chairman*

DAN BURTON, Indiana
CHRISTOPHER SHAYS, Connecticut
ILEANA ROS-LEHTINEN, Florida
JOHN M. MCHUGH, New York
JOHN L. MICA, Florida
MARK E. SOUDER, Indiana
STEVEN C. LATOURETTE, Ohio
DOUG OSE, California
RON LEWIS, Kentucky
JO ANN DAVIS, Virginia
TODD RUSSELL PLATTS, Pennsylvania
CHRIS CANNON, Utah
ADAM H. PUTNAM, Florida
EDWARD L. SCHROCK, Virginia
JOHN J. DUNCAN, JR., Tennessee
JOHN SULLIVAN, Oklahoma
NATHAN DEAL, Georgia
CANDICE S. MILLER, Michigan
TIM MURPHY, Pennsylvania
MICHAEL R. TURNER, Ohio
JOHN R. CARTER, Texas
WILLIAM J. JANKLOW, South Dakota
MARSHA BLACKBURN, Tennessee

HENRY A. WAXMAN, California
TOM LANTOS, California
MAJOR R. OWENS, New York
EDOLPHUS TOWNS, New York
PAUL E. KANJORSKI, Pennsylvania
CAROLYN B. MALONEY, New York
ELIJAH E. CUMMINGS, Maryland
DENNIS J. KUCINICH, Ohio
DANNY K. DAVIS, Illinois
JOHN F. TIERNEY, Massachusetts
WM. LACY CLAY, Missouri
DIANE E. WATSON, California
STEPHEN F. LYNCH, Massachusetts
CHRIS VAN HOLLEN, Maryland
LINDA T. SANCHEZ, California
C.A. "DUTCH" RUPPERSBERGER, Maryland
ELEANOR HOLMES NORTON, District of Columbia
JIM COOPER, Tennessee
CHRIS BELL, Texas

BERNARD SANDERS, Vermont (Independent)

PETER SIRH, *Staff Director*
MELISSA WOJCIAK, *Deputy Staff Director*
ROB BORDEN, *Parliamentarian*
TERESA AUSTIN, *Chief Clerk*
PHILIP M. SCHILIRO, *Minority Staff Director*

SUBCOMMITTEE ON NATIONAL SECURITY, EMERGING THREATS AND INTERNATIONAL RELATIONS

CHRISTOPHER SHAYS, Connecticut, *Chairman*

MICHAEL R. TURNER, Ohio
DAN BURTON, Indiana
STEVEN C. LATOURETTE, Ohio
RON LEWIS, Kentucky
TODD RUSSELL PLATTS, Pennsylvania
ADAM H. PUTNAM, Florida
EDWARD L. SCHROCK, Virginia
JOHN J. DUNCAN, JR., Tennessee
TIM MURPHY, Pennsylvania
WILLIAM J. JANKLOW, South Dakota

DENNIS J. KUCINICH, Ohio
TOM LANTOS, California
BERNARD SANDERS, Vermont
STEPHEN F. LYNCH, Massachusetts
CAROLYN B. MALONEY, New York
LINDA T. SANCHEZ, California
C.A. "DUTCH" RUPPERSBERGER, Maryland
CHRIS BELL, Texas
JOHN F. TIERNEY, Massachusetts

EX OFFICIO

TOM DAVIS, Virginia
HENRY A. WAXMAN, California

LAWRENCE J. HALLORAN, *Staff Director and Counsel*
ROBERT A. BRIGGS, *Clerk*
DAVID RAPALLO, *Minority Counsel*

CONTENTS

	Page
Hearing held on September 29, 2003	1
Statement of:	
Jakub, Michael A., Director of Technical Programs, Office of the Coordinator for Counterterrorism, Department of State; Edward McCallum, Director, Combating Terrorism Technology Support Office, Department of Defense; Dr. David Bolka, Director, Homeland Security Advanced Research Projects Agency, Department of Homeland Security	5
Patel, Gordhan, president, JP Laboratories, Middlesex, NJ; Jack Sawicki, Director of Business Development, Geomet Technologies, LLC, Germantown, MD; Lee F. Sword, program manager, Military Systems Division, Irobot Corp., Burlington, MA; Richard Mastronardi, vice president of product management, American Science and Engineering, Inc., Billerica, MA; Bruce deGrazia, chairman, Homeland Security Industries Association, Washington, DC; Kenneth P. Ducey, president, Markland Technologies, Inc., Ridgefield, CT; and Laurence D. Bory, vice president, Federal Government Relations, HDR, Inc., Orlando, FL	69
Letters, statements, etc., submitted for the record by:	
Bolka, Dr. David, Director, Homeland Security Advanced Research Projects Agency, Department of Homeland Security:	
Information concerning inventory	65
Prepared statement of	45
Bory, Laurence D., vice president, Federal Government Relations, HDR, Inc., Orlando, FL, prepared statement of	136
deGrazia, Bruce, chairman, Homeland Security Industries Association, Washington, DC, prepared statement of	114
Ducey, Kenneth P., president, Markland Technologies, Inc., Ridgefield, CT, prepared statement of	129
Jakub, Michael A., Director of Technical Programs, Office of the Coordinator for Counterterrorism, Department of State, prepared statement of	10
Mastronardi, Richard, vice president of product management, American Science and Engineering, Inc., Billerica, MA, prepared statement of	105
McCallum, Edward, Director, Combating Terrorism Technology Support Office, Department of Defense, prepared statement of	18
Patel, Gordhan, president, JP Laboratories, Middlesex, NJ, prepared statement of	71
Sawicki, Jack, Director of Business Development, Geomet Technologies, LLC, Germantown, MD, prepared statement of	90
Shays, Hon. Christopher, a Representative in Congress from the State of Connecticut, prepared statement of	3
Sword, Lee F., program manager, Military Systems Division, Irobot Corp., Burlington, MA, prepared statement of	97

COUNTERTERRORISM TECHNOLOGY: PICKING WINNERS AND LOSERS

MONDAY, SEPTEMBER 29, 2003

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON NATIONAL SECURITY, EMERGING THREATS AND INTERNATIONAL RELATIONS,
COMMITTEE ON GOVERNMENT REFORM,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:05 p.m., in room 2154, Rayburn House Office Building, Hon. Christopher Shays (chairman of the subcommittee) presiding.

Present: Representatives Shays and Tierney.

Staff present: Lawrence Halloran, staff director and counsel; Robert A. Briggs, clerk; Joseph McGowan, detailee; Mary Holloway, intern; David Rapallo, minority counsel; and Jean Gosa, minority assistant clerk.

Mr. SHAYS. The Subcommittee on National Security, Emerging Threats and International Relations hearing entitled, "Counterterrorism Technology: Picking Winners and Losers," is called to order.

The emergence of terrorism as a threat to domestic security laid bare our myriad vulnerabilities, but also unleashed a tidal wave of national scientific ingenuity and creativity.

Long before September 11, government, businesses, and individuals pursued development of new technologies to strengthen homeland defenses. Research labs, defense contractors, Members of Congress and others have been inundated with proposals for everything from satellite monitoring cargo containers to individual radiation detectors.

What happens to all those ideas? Who is responsible for sorting through that mountain of paper, sifting wheat from chaff, and making sure only the best concepts move forward to prototype and the marketplace.

In the past, we found duplication and the lack of coordination in Federal counterterrorism research and development programs. Testimony before this subcommittee in March 2000, described overlapping, unfocused chemical and biological defense research programs in the Department of Defense, the Defense Advanced Research Projects Agency, the Department of Energy labs, and the Department of Justice.

We also heard about an established interagency forum for evaluation and rapid prototyping of counterterrorism technologies, called the Technical Support Working Group [TSWG].

Now, to that already crowded field, add the Department of Homeland Security [DHS], which Congress charged to act as both the developer and clearinghouse for innovative technologies.

Today, we focus on the TSWG process, their performance, or its performance, and its potential role with DHS in channeling the torrent of homeland security technologies into a coherent stream.

In terms of process, the working group relies on Broad Area Announcements to sweep the technological horizon for proposals. The subgroups of interested agency representatives and experts use streamlined formats to speed evaluation of the responses. Projects meeting specific requirements have been nurtured and brought quickly to production.

In the near term, DHS will use the Technical Support Working Group process to develop a substantial volume of annual funding for prototype technologies, but DHS officials concede they are establishing similar and overlapping capabilities within their organization, so we asked TSWG participants, both government agencies and private sector innovators, to assess the past and potential of the working group in establishing and implementing government-wide priorities for homeland security technologies.

We thank all our witnesses for their time and expertise, and we look forward to their testimony.

[The prepared statement of Hon. Christopher Shays follows:]

TOM DAVIS, VIRGINIA,
CHAIRMAN

DAN BURTON, INDIANA
CHRISTOPHER SHAYS, CONNECTICUT
ILEANA ROS-LEHTINEN, FLORIDA
JOHN M. McHUGH, NEW YORK
JOHN L. MICA, FLORIDA
MARK E. SOUDER, INDIANA
STEVEN C. LaTOURETTE, OHIO
DOUG OSE, CALIFORNIA
RON LEWIS, KENTUCKY
JO ANN DAVIS, VIRGINIA
TODD RUSSELL PLATTS, PENNSYLVANIA
CHRIS CANNON, UTAH
ADAM H. PUTNAM, FLORIDA
EDWARD L. SCHROCK, VIRGINIA
JOHN J. DUNCAN, JR., TENNESSEE
JOHN SULLIVAN, OKLAHOMA
NATHAN DEAL, GEORGIA
CANDICE MILLER, MICHIGAN
TIM MURPHY, PENNSYLVANIA
MICHAEL R. TURNER, OHIO
JOHN R. CARTER, TEXAS
WILLIAM J. JANKLOW, SOUTH DAKOTA
MARSHA BLACKBURN, TENNESSEE

ONE HUNDRED EIGHTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON GOVERNMENT REFORM

2157 RAYBURN HOUSE OFFICE BUILDING

WASHINGTON, DC 20515–6143

MAJORITY (202) 225–5074
FACSIMILE (202) 225–3974
MINORITY (202) 225–5051
TTY (202) 225–6852

www.house.gov/reform

HENRY A. WAXMAN, CALIFORNIA,
RANKING MINORITY MEMBER

TOM LANTOS, CALIFORNIA
MAJOR R. OWENS, NEW YORK
EDOLPHUS TOWNS, NEW YORK
PAUL E. KANJORSKI, PENNSYLVANIA
CAROLYN B. MALONEY, NEW YORK
ELIJAH E. CUMMINGS, MARYLAND
DENNIS J. KUCINICH, OHIO
DANNY K. DAVIS, ILLINOIS
JOHN F. TIERNEY, MASSACHUSETTS
WM. LACY CLAY, MISSOURI
DIANE E. WATSON, CALIFORNIA
STEPHEN F. LYNCH, MASSACHUSETTS
CHRIS VAN HOLLEN, MARYLAND
LINDA T. SANCHEZ, CALIFORNIA
C.A. DUTCH RUPPERSBERGER,
MARYLAND
ELEANOR HOLMES NORTON,
DISTRICT OF COLUMBIA
JIM COOPER, TENNESSEE
CHRIS BELL, TEXAS

BERNARD SANDERS, VERMONT,
INDEPENDENT

SUBCOMMITTEE ON NATIONAL SECURITY, EMERGING THREATS,
AND INTERNATIONAL RELATIONS
Christopher Shays, Connecticut
Chairman
Room B-372 Rayburn Building
Washington, D.C. 20515
Tel: 202 225-2548
Fax: 202 225-2382
E-mail: hr.groc@mail.house.gov

Statement of Rep. Christopher Shays
September 29, 2003

The emergence of terrorism as a threat to domestic security laid bare our myriad vulnerabilities, but also unleashed a tidal wave of national scientific ingenuity and creativity.

Well before September 11th, government, businesses and individuals pursued development of new technologies to strengthen homeland defenses. Research labs, defense contractors, Members of Congress and others have been inundated with proposals for everything from satellite monitored cargo containers to individual radiation detectors.

What happens to all those ideas? Who is responsible for sorting through that mountain of paper, sifting wheat from chaff, and making sure only the best concepts move forward to prototype and the marketplace?

In the past, we found duplication and a lack of coordination in federal counterterrorism research and development programs. Testimony before this Subcommittee in March 2000 described overlapping, unfocused chemical and biological defense research programs in the Department of Defense (DOD), the Defense Advanced Research Projects Agency, Department of Energy labs, and the Department of Justice.

We also heard about an established interagency forum for evaluation and rapid prototyping of counterterrorism technologies called the Technical Support Working Group (TSWG).

Now, to that already crowded field, add the Department of Homeland Security (DHS), which Congress charged to act as both a developer and clearinghouse for innovative technologies.

Today we focus on the TSWG process, their performance and their potential role, with DHS, in channeling the torrent of homeland security technologies into a coherent stream.

In terms of process, the working group relies on Broad Area Announcements to sweep the technological horizon for proposals. Subgroups of interested agency representatives and experts use streamlined formats to speed evaluation of the responses. Projects meeting specific requirements have been nurtured and brought quickly to production.

In the near term, DHS will use the working group process to direct a substantial volume of annual funding for prototype technologies. But DHS officials concede they are establishing similar and overlapping capabilities. So we asked TSWG participants, both government agencies and private sector innovators, to assess the past and potential of the working group in establishing and implementing government-wide priorities for homeland security technologies.

We thank all our witnesses for their time and expertise, and we look forward to their testimony.

Mr. SHAYS. At this time, let me just recognize our first panel, and then I'll swear them in.

We have Mr. Michael Jakub, Director of Technical Programs, Office of the Coordinator for Counterterrorism, Department of State.

We have Mr. Edward McCallum, Director, Combating Terrorism Technology Support Office, Department of Defense.

We also have Mr. David Bolka, Director of HSARPA, which is? Homeland Security Advanced Research Projects Agency, right below. It's Doctor, I'm sorry, from the Department of Homeland Security.

At this time, gentlemen, if you would stand, we'll swear you in and we'll proceed.

If there is anyone else that you may want to testify, or respond to questions?

[Witnesses sworn.]

Mr. SHAYS. We'll start with you, Mr. Jakub.

Thank you very much, and what we're going to do is allow you to speak 5 minutes and then roll over another 5. I would prefer you not take 10, but I don't want you to feel rushed in your 5 minutes. With these mics you need to get pretty close to them, and you also need to make sure they're on.

That's not close enough. I'm sorry. You're going to have to move it right in front.

There we go.

STATEMENTS OF MICHAEL A. JAKUB, DIRECTOR OF TECHNICAL PROGRAMS, OFFICE OF THE COORDINATOR FOR COUNTERTERRORISM, DEPARTMENT OF STATE; EDWARD McCALLUM, DIRECTOR, COMBATING TERRORISM TECHNOLOGY SUPPORT OFFICE, DEPARTMENT OF DEFENSE; DR. DAVID BOLKA, DIRECTOR, HOMELAND SECURITY ADVANCED RESEARCH PROJECTS AGENCY, DEPARTMENT OF HOMELAND SECURITY

Mr. JAKUB. Thank you very much, Mr. Chairman, for the opportunity to testify today on the National Combating Terrorism Research and Development Program, which is carried out by the interagency Technical Support Working Group.

As you know, I'm accompanied today by Mr. Edward McCallum, from the Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict; and in the future, I'll just say SOLIC so everybody knows what we're talking about, and by Mr. David Bolka from the Department of Homeland Security.

Before I start, Ambassador Black, the Coordinator for Counterterrorism at the State Department sends his regards to you and to other members of the subcommittee. He notes that he wanted to be here today, but he has a schedule conflict and he's currently traveling overseas.

Mr. SHAYS. I'm told that you're a better replacement; is that right?

Mr. JAKUB. My boss is here, so we'll have to put that into the——

Mr. SHAYS. OK, as long as you know what you're talking about.

Mr. JAKUB. With your permission, we wanted to submit a slightly revised statement for the record.

I'm going to be talking to you today and trying to put the TSWG into a broad perspective for you. The other presentations, I think, will narrow it down a little further, but by approaching it in this manner, you're going to get a feel for the entire program.

The hearings come at a very good time. They come at a time of daily reminders of the terrorist threat, and I don't want to go into a lot about the terrorist threat, but we need to put this in a better perspective because you're going to hear us—at TSWG, hear us talk about a threat-driven, requirements-based program; and everything we do derives from the nature of the threat that we are facing today as a country.

Just a couple points I want to make. The terrorist threat is spreading geographically. There is no geographic area that is immune from this type of threat. September 11, the events of September 11, brought the events home to the continental United States. Bali, which occurred last October, demonstrates that no area, no matter how idyllic, is immune to the threat of international terrorism.

Second, terrorist capabilities and especially their technical capabilities are growing and increasing. Terrorists have demonstrated they can acquire sophisticated weapons like the SA–7 that they attempted to use last year in Mombasa. They get these either from State sponsored support or the black market, and they also get training from various State sponsors.

Terrorists are also sharing information on technical expertise, for example, specifically in areas of improvised explosive devices, explosive mixtures, detonating systems and the like. Information from the cookbooks and the computer files that were seized in Afghanistan are, as we have found out, in the hands of other terrorist groups. There's also a preoccupation by some terrorist groups today with chemical, biological, and radiological materials and toxic industrial chemicals.

The arrests in the United Kingdom and France earlier this year and in Italy last year demonstrate this current preoccupation. Thankfully, those attacks were thwarted before any real damage could have been carried out, but they are a possible harbinger of things to come, and they are things that those of us working in technology development need to keep uppermost in our minds. We need to be aware of the evolving nature of the terrorist threat.

In terms of the U.S. response, Mr. Chairman, the United States and its allies have been working hard to prevent terrorist attacks through a variety of means. We highlight a number of those in the written statement. The one I want to focus on today, though, is our effort to rapidly develop and apply technology to meet the challenges posed by terrorists.

Specifically, our challenge is to provide a coherent and consistent context for technology development based on the threat, technical innovation, real operator needs, and proven procedures and tactics. Simply put, the TSWG philosophy is to try to "get ahead of the curve." We want to try and anticipate future weapons and tactics that may be used by terrorists and develop good countermeasures to defeat terrorist capabilities and, at the same time, enhance the counterterrorism capabilities of the United States and its allies.

We provided in the written statement a pretty detailed description of how the TSWG program came to be and its funding sources. I don't want to review that here in detail with you, but I do want to make a couple points.

Counterterrorism R&D was one of the key issues addressed in 1986 in the Vice President's Task Force Report on Combating Terrorism. That was chaired by then-Vice President Bush. The task force recommended the formation of an interdepartmental mechanism to coordinate a national R&D program aimed at filling the gaps in existing R&D and trying to prevent duplication of efforts. State, and specifically my office, was assigned responsibility for developing and coordinating this effort, and to accomplish that task, we formed the TSWG, which has existed since that time.

Initial funding for TSWG was centered in the State budget. However, by the early 1990's, it came to be recognized in Congress, within the administration, within all the departments at that time, that if that funding and if that program was going to grow, it was going to have to have funding contributions from a lot of other agencies besides the Department. In response, the DOD acknowledged the importance of the program and formally established a dedicated funding line beginning in fiscal year 1992 to support the TSWG and the national program. From that date until today, both State and Defense annually contribute what we call core funding for the program with DOD providing the "lion's share" of those core funds. Other departments and agencies, however, also contribute funds based on their interests, their needs, and the degree to which our national program is addressing their specific requirements.

Our current organization for TSWG is relatively simple and straightforward. It demonstrates both the TSWG's interdepartmental approach and our focus on developing technology in those critical functional areas necessary to have a well-rounded counterterrorism program.

You should have an attachment with our statement up there which gives you a line or block chart. You might want to refer to that just for a second.

TSWG is a jointly administered effort with Defense. My office, the Office of the Coordinator for Counterterrorism, provides policy oversight and overall program direction through our chairmanship.

Mr. SHAYS. I'm going to ask you to suspend. You want us to refer to what?

Mr. JAKUB. There should be an attachment there, sir, which gives you a line of—yes, sir. That's it.

Mr. SHAYS. Do we have that?

OK. Thank you.

Mr. JAKUB. If you take a look at that chart, you'll see that the program is a jointly administered effort with Defense; and my office, the Office of the Coordinator for Counterterrorism, provides policy oversight and overall program direction through our chairmanship of the TSWG's executive committee. We also contribute core funds to the program. OASD/SOLIC provides technical oversight, executes and administers the program on a daily basis through what is called the Combating Terrorism Technology Support Office and also contributes the lion's share of core funding for the program.

If you refer to all the blocks across the bottom of the chart, those are our functional subgroups. Ten Federal departments and a number of Federal agencies, representing over 80 elements of the Federal Government, participate in those functional subworking groups. This is where requirements are generated and proposals are evaluated. Mr. McCallum is going to explain this in a lot more detail in a few minutes.

In addition to Federal elements, we have extended membership invitations to selected State and local organizations and to some congressional elements as well. For example, the Capitol Police, the Senate Sergeant at Arms and the Office of the Architect of the Capitol also participate on several of the TSWG's subworking groups. We like to hear the requirements from the Hill as well as those from Federal departments.

Most recently, we reached agreement with the new Department of Homeland Security to join the TSWG. As a result, the TSWG will implement, with the support of DHS, those rapid prototyping and development technology requirements of interest to that department, many of which are also of interest to other departments and agencies as well. DHS has also agreed to contribute funding to the TSWG to assist in the program.

Our program focuses on advanced technology development activities to meet the near-term counterterrorism and antiterrorism technology and equipment needs of the Federal community. Specifically, we support U.S. diplomatic, intelligence, security, law enforcement, the military, and the first responder communities.

I won't go into examples of all the successes that we have had, but if you remember the threat I talked a bit about just at the beginning of this presentation, we mentioned terrorist interest in CBR materials. Two of our more recent projects have been the escape masks which have also been issued to Members of Congress and are being bought, right now, by other departments; and more recently we have produced and are disseminating now a low-cost dosimeter badge designed to give the wearer an immediate indication of exposure to a radiological source.

Now, those are just two examples describing how our program is contributing to the global war on terrorism. There are some others which, because of time and of classification, I can't discuss in an open forum. You should be aware, however, that some of the equipment that's being used today by our military forces and intelligence forces in Afghanistan and Iraq, as well as equipment being used right now to provide antiterrorism force protection for our embassies and for our military bases, both home and abroad, were developed by the TSWG program. We can provide you more examples that you may be interested in.

One other aspect of our program is that we also have developed cooperative R&D agreements with three selected NATO and major non-NATO allies. This is done to assist in helping us accomplish our objectives. Thus, we can leverage our own funding. These working arrangements are with Canada, Israel, and the United Kingdom. Successfully completed projects result in equipment that we both—both we and our partners—have jointly developed and are employing, and in a written statement, I give you some examples.

I don't want to dwell on them here. There are a lot of others, as well.

In conclusion, Mr. Chairman, we believe the TSWG program is a valuable arrow in the national quiver for countering the evolving terrorism threat. We'd like to expand the program by adding a few more foreign partners who have demonstrated R&D capabilities in counterterrorism technologies, who share our views on the threat, have an appropriate interagency focus in their technical development activities and are willing to pay their fair share in joint technology development.

When combined with other R&D programs for combating terrorism, for example, those that are going to be developed in the Department of Homeland Security as well as existing ones in DOD, the Intel Community, the FBI, and other agencies, we believe we're making real progress in addressing the technical nature of the terrorist threat.

Those are us who work in the TSWG program are very proud of its accomplishments. Our guiding goal here is to put enhanced and usable technical capability into the hands of those involved on a daily basis in conducting the global war on terrorism, and we believe we're achieving that goal. We believe our ability to be successful is derived from our current business practices, which are based on a requirements-driven process, featuring extensive information exchange with both the user and developer communities. We're also mindful and thankful for the dedication and hard work of all the men and women who are part of the TSWG family.

Mr. SHAYS. Thank you very much.

[The prepared statement of Mr. Jakub follows:]

TESTIMONY BY
MICHAEL A. JAKUB
DIRECTOR FOR TECHNICAL PROGRAMS
OFFICE OF THE COORDINATOR
FOR COUNTERTERRORISM
TO THE
NATIONAL SECURITY SUBCOMMITTEE
COMMITTEE ON GOVERNMENT REFORM
SEPTEMBER 29, 2003

Mr. Chairman:

Thank you for the opportunity to testify today on the National Combating Terrorism Research and Development Program which is carried out by the interagency Technical Support Working Group (TSWG). I am accompanied today by Mr. Edward McCallum from the Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict (OASD/SOLIC), and by Mr. David Bolka from the Department of Homeland Security.

With your permission, I would like to submit this statement along with some attachments for the record.

The Terrorist Threat

These hearings come at a time of daily reminders of the terrorist threat. Just a few weeks ago, the U.S. Intelligence Community issued a threat advisory warning of continued terrorist planning to strike at U.S. interests both at home and abroad. Virtually every evening newscast contains stories describing terrorist violence against U.S. targets and our allies in the Global War on Terrorism. Statistics compiled by the U.S. Government reflect the spreading international nature of the threat. For example, through June 30, 2003, we have recorded 105 international terrorist attacks resulting in 108 persons killed and 1022 wounded around the world so far this year. While the primary focus of these attacks occurs in the Middle East and South Asia, no geographic area is immune as demonstrated by last October's horrendous attack in Bali and the more recent attacks in Mombassa, Jakarta, Casablanca and even the U.N. headquarters in Baghdad.

Just as the geographic areas for international terrorism are expanding, so too is the nature of the technical capabilities that terrorists are employing. Terrorists have demonstrated that they can acquire rather sophisticated weapons systems like the SA-7 surface-to-air missile used last November in Kenya. What they cannot acquire either through state sponsor support or via the black market, they seek to develop themselves.

The terrorist cookbooks and computer files seized in Afghanistan, many of which have been shared by Al-Qaida with other terrorist organizations, demonstrate a growing proficiency in developing improvised explosive mixtures and detonating systems, and a

growing preoccupation with developing "low tech" methods to use radiological, chemical and biological materials, including toxic industrial chemicals.

The U.S. Response

Mr. Chairman, the U.S. and its allies have been working hard to prevent terrorist attacks, through a variety of means including enhanced intelligence and law enforcement information exchanges, joint CT operations with our allies, steps to curb terrorism funding and movement of terrorists, and wide-ranging bilateral and multilateral diplomatic efforts to pressure and isolate terrorists and those nations that support them.

In addition, we also have developed an expanded program to enhance the capabilities of the U.S. and its allies in the Global War on Terrorism by rapidly developing and applying technology to meet the challenges posed by terrorists. To further this national goal, the TSWG continues to focus its program development efforts to balance investments across the four pillars of combating terrorism: antiterrorism (protective); counterterrorism (proactive); intelligence and law enforcement capability support; and consequence management.

Our challenge is to provide a coherent and consistent context for technology development based on the threat, technical innovation, real operator needs, and proven procedures and tactics. Simply put, the TSWG philosophy is to try to "get ahead of the curve" – to anticipate future weapons and tactics used by terrorists – and to develop security-based countermeasures to defeat terrorist capabilities and enhance the CT capabilities of the U.S. and its allies.

History of the TSWG Program

To fully understand the TSWG program, it might be useful to describe how the Program originated. In 1982, a National Security Decision Directive (NSDD) assigned to the Interdepartmental Group on Terrorism, chaired by the State Department, responsibility for developing overall U.S. policy on countering terrorism. Several subgroups were established, including a Technical Working Group to share information about counterterrorism research and development issues. Counterterrorism R&D was one of the key issues addressed in 1986 by the Vice President's Task Force on Combating Terrorism, chaired by then Vice President George Bush. The Task Force found that the U.S. Government's counterterrorism R&D efforts were uncoordinated and unfocused. The Task Force recommended the formation of an interdepartmental mechanism to coordinate a national-level R&D program aimed at filling the gaps in existing R&D and to prevent duplication of efforts. The State Department, as the lead agency for combating international terrorism (and within State, the Office of the Coordinator for Counterterrorism) was assigned responsibility for developing and coordinating this effort. To accomplish the task, we formed the TSWG.

Funding

Funding for the TSWG Program initially was centered in the State Department's budget. However, by the early 1990's, it was recognized by our office in the State Department, the Congress, the National Security Council and in other Departments that increased interdepartmental funding for the Program was required if the TSWG was going to grow and prosper. The then Deputy for National Security Affairs (Mr. Robert Gates) formally requested other relevant Departments and agencies to consider increasing funding for the National Program. In response, DOD acknowledged the importance of the Program and formally established a dedicated funding line beginning in FY 1992 to support the TSWG and the National Program.

From 1992 until today, both State and Defense annually contribute the core funding for the Program with DOD providing the "lion's share" of the resources. Other Departments and agencies also contribute funds based on their interests, needs, and the degree to which the National Program is addressing their specific requirements. In our FY 2004 Program, we are expecting funding contributions from other agencies and departments to assist in accomplishing the National Program. If we receive all of the funds appropriated and promised, we will execute a $200M Program in FY 2004 with 92% of our funds directed toward projects and a relatively low 8% used for Program administration.

TSWG Organization and Accomplishments

Our current organization is relatively simple and straightforward. It demonstrates both the TSWG's interdepartmental approach and our focus on developing technology in those critical functional areas necessary to have a well-rounded counterterrorism program. I have attached an organization chart of the TSWG which displays our organization and its component elements
(Attachment 1).

The TSWG is a jointly administered effort with DOD. My office (Office of the Coordinator for Counterterrorism) provides policy oversight and overall program direction through our chairmanship of the TSWG Executive Committee. The Department also contributes toward "core funding" of the TSWG Program. The Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict (OASD/SOLIC) provides technical oversight, executes and administers the Program on a daily basis through the Combating Terrorism Technology Support Office, and contributes the lion's share of core funding for the Program.

Ten Federal Departments and a number of Federal Agencies (e.g. CIA, EPA et al) representing over 80 elements of the Federal Government participate in the functional sub-working groups of the TSWG where requirements are generated and proposals are evaluated. In addition to federal elements, the TSWG has extended membership invitations to selected state and local organizations and to Congressional elements as

well. (The Capitol Police, the Senate Sergeant-at-Arms and the Office of the Architect of the Capitol participate on several of the TSWG sub-working groups).

Most recently, we reached agreement with the new Department of Homeland Security (DHS) to join the TSWG. As a result, the TSWG will implement (with the support of DHS) those rapid prototyping and development technology requirements of interest to that Department – many of which are also of interest to other Departments and agencies as well. DHS has also agreed to contribute funding to the TSWG to assist the Program.

The TSWG Program focuses on advanced technology development activities to meet the near term counterterrorism and antiterrorism technology and equipment needs of the federal community. Specifically, our Program focuses on supporting the immediate counterterrorism technology needs of U.S. diplomatic, intelligence, security, law enforcement, the military, and first responder communities.

As the Washington Post reported on February 21, 2003, the successfully transitioned TSWG projects include escape masks issued to Members of Congress and their staff. The State Department has purchased over 30,000 of these Quick 2000 ™ masks for use by our personnel at embassies abroad in high threat areas. DOD is purchasing over 80,000 of these masks for distribution to DOD civilian and military personnel stationed in the Washington D.C. area.

A Wall Street Journal article on March 3, 2003 described a low-cost dosimeter badge designed to give the wearer an immediate indication of exposure to a radiological source. These dosimeter badges are now being purchased by the Departments of State and Defense, and others are being purchased by local and state police and first responder groups. That dosimeter badge, as well as the masks, resulted from TSWG projects.

These are just two examples describing how the TSWG Program is contributing to the Global War on Terrorism. There are many others which, because of time and in some cases classification, I cannot discuss in an open forum. You should be aware however that some of the equipment being used today by our military forces and intelligence elements in Afghanistan and Iraq, as well as equipment being utilized right now to provide anti-terrorism force protection for our embassies and our military bases at home and abroad were developed by the TSWG Program.

International Facet of the Program

Another interesting aspect to the TSWG Program is that under the state Department's leadership, we have developed cooperative R&D agreements with three selected NATO and major non-NATO allies to assist in accomplishing its objectives. These are not foreign aid agreements. Each participant contributes funds and expertise, thus we leverage our own funding. These working arrangements with Canada, Israel and the U.K. have been very valuable to us and to our partners. We can leverage our funding

and share the work. Successfully completed projects result in equipment that both we and our partners have jointly developed and employed.

For example, we have developed with one of our foreign partners a long range surveillance system which is being used by the U.S. and our foreign powers. With another partner, we have developed a chemical – biological protective suit that also protects the wearer from fragmentation that might result from the detonation of an improvised explosive device. This piece of gear, the only one of its kind in the world, is available for purchase by the military communities in both nations as well as by state and local police and HAZMAT elements. With our third partner, we have jointly developed a variety of tagging, tracking and locating systems currently being utilized by the law enforcement and intelligence communities in both of our nations. Again these are just a few examples.

Conclusion

Mr. Chairman, in conclusion, we believe the TSWG Program is a valuable arrow in the national quiver for countering the evolving terrorism threat. In the future, we would like to expand the program by adding a few new foreign partners who have demonstrated R&D capabilities in counterterrorism technologies, share our views on the terrorist threat, have an appropriate interagency focus in their technical development activities, and are willing to pay their fair share in joint technology development. When combined with other programs for combating terrorism in the Department of Homeland Security, the Department of Defense, the Intelligence Community and other agencies, we believe that we are making real progress on addressing the technical aspects of the terrorist threat.

If funding permits, expanding the Program into new technology areas to support our U.S. consumers, as well as expanding our work with existing foreign partners and possibly adding new partners, will strengthen our efforts to employ modern technology to help counter terrorist threats.

Those of us who work in the TSWG Program are very proud of its accomplishments. Our guiding goal is to put enhanced and useable technical capability into the hands of those involved on a daily basis in conducting the Global War on Terrorism – and we are achieving that goal.

We believe that our ability to be successful is derived from our current business practices which are based on a requirements-driven process featuring extensive information exchange with the user community. We are also mindful and thankful for the dedication and hard work of all the men and women who are part of the TSWG family.

To describe for you in some detail those business practices and comment on some of the specific results obtained, I would like to turn this over to Mr. McCallum who oversees the day to day operations of the TSWG Program. I would be happy to answer any questions you might have following his presentation.

Mr. SHAYS. Mr. McCallum.

Mr. MCCALLUM. Good afternoon, Mr. Chairman, members of the committee. I'm Edward McCallum, Director of the DOD Combating Terrorism Technology Support Office, the office that manages the affairs of the Technical Support Working Group, which I'll call the TSWG from now on, as most other people do, and the Military Explosive Ordnance Disposal Low-Intensity Conflict program.

Mr. Jakub has artfully described the history and heritage of the TSWG, so my oral testimony will emphasize the organization, some of the business processes that he spoke of, and a few selected successes. We have for your display an easel board with some charts.

Now, there are eye charts for all of us, and for you, too, but we will refer to some pages in the written testimony that also include those charts.

As Mr. Jakub stated, our mission is to conduct the National Interagency Research and Development Program for Combating Terrorism.

Mr. SHAYS. Mr. McCallum, this chart is also available for us. Is it in the——

Mr. MCCALLUM. I'll get to the chart in just a moment, but this chart is displayed on page 3 of the written testimony.

Mr. SHAYS. Thank you. OK.

Mr. MCCALLUM. The TSWG carries out its mission by providing technologies to support both Armed Forces overseas, who are bringing the fight to the enemy, and first responders at home. TSWG-developed technologies are not proprietary to a single or particular user base, but frequently have applications to warfighters and first responders. Our technologies are being used for offensive warfighting operations and for defensive measures at home. Sensors and detectors assist in preventing incidents, while other technologies help mitigate the consequences of these actions or attribute culpability for these incidents when they occur.

The organization of the TSWG includes representatives from over 80 Federal organizations, and although the eye chart is difficult to read, it really shows the expanse of participants, and that's displayed on page 3 of the written testimony for your review. It crosses the depth and width of the Federal Government from Agriculture to Defense to all of the other Homeland Security elements including DHS.

Departments and agencies, including representatives from our first responder end-user communities, such as firemen, policemen, HAZMAT, bomb squads, participate in nine of these subgroups. The organization is displayed in the second easel chart and also on page 2 of the testimony. It's the same organization that Mr. Jakub displayed before you, but I wanted to go for just a moment across the bottom. He described the management oversight process, but if you take a look at the chart, you will see a broad representation of Federal agencies who chair these subgroups.

Below those single-letter agencies are represented about 300 individual operators, scientists, and engineers from across the Federal Government and our first responder community who come to the table to describe their requirements and to help us shepherd them through the entire procurement process.

We believe we operate under a highly successful integrated business model, and we'll display it on a third easel chart, which is available on page 4, and I'll speak for just a moment to that chart.

As Mr. Jakub mentioned, we start the year in January with a "Threat Day" where members of the intelligence and law enforcement community come before our 300—approximately 300 members and describe to them what the threat situation is in real-day terms; and that—not only the threat, but they help us define and prioritize requirements for the upcoming year. The requirements definition/prioritization by ultimate users assures that R&D products produced by TSWG's rapid prototyping program will ultimately enter the marketplace or military acquisition process.

It's followed, just before the 12 o'clock and where you see BAA for Broad Agency Announcement, by advanced annual program briefing industry, where we brief prospective vendors on requirements and invite their industry comments and clarification. This process helps assure that what we get from industry meets our specific, posted requirements.

TSWG utilizes a three-step process for managing this process as depicted on the right-hand side of the chart. We first ask for a one-page quad chart from industry. We ask for that in order to minimize their expense and to maximize our ability to review their proposals and get them out to the community. We recognize that the preparation of good proposals requires a substantial amount of time and money from industry, and it manages the selection process through the stages of quad charts, white papers and final proposals.

The success rate for final proposals is always above 80 percent, and sometimes it gets up to 90 percent. The entire process of posting requirements and informing proposals on how to apply and the evaluation is done electronically through a Broad Agency Announcement electronic commerce system, which we call a BIDS, which is the Broad Agency Announcement Information Delivery System, and it's available on our Web site at www.bids.tswg.gov.

The process is aimed at putting prototypes into the hands of users within approximately 24 months. A few years ago, we used to talk 18 months. The process has gotten a little larger and slightly more involved, and in the last years we sometimes have given products to our users, particularly within the military front within days, but much of the low hanging fruit has been picked in this endeavor.

In the written testimony, we've given you a dozen or so successes which are in the hands of users and which we've delivered in the last year or so. In addition to that, I just wanted to bring one hard piece here.

We've been attempting to develop technology which is handheld, so that first responders, whether they're HAZMAT teams or military units, can have it in their pockets or their rucksacks and carry it usefully. One of our providers this year developed for us a heat stress calculator, which has been very popular in both the military community and the Justice Department for first responders.

We've also read and some of us have experienced how uncomfortable full chemical outfits can be, particularly when under any kind of heat stress, and in fact, in Southeast Asia I lost more troops to

heat stress than I did to either disease or enemy fire. This calculator, within about 1 minute can tell you what a person in any of these conditions, in various heat and various humidity conditions and work load—you know, how long they can normally endure; and it is being looked at by firemen and military users.

And one that I did want to bring to your attention—and we have copies here for you—is a Best Practices and Guidelines for Mass Personnel Decontamination. A few years ago, when the B'nai B'rith was threatened here in Washington, DC, and we saw scenes of civilians being run between some—a couple of fire department hose trucks, it occurred to us that the procedures that had been developed for military people wouldn't necessarily fit for this, you know, Capitol Building or people around the world, so we set out to develop a Best Practices and Guidelines. It encompasses not just science and evidence-based practices, but also best business practices and science practices. It was developed by the United States, the U.K., and Canada.

In closing, I'd like to cite what I believe to be distinctive about our Technical Support Working Group accomplishments. They represent real problems to real solutions encountered by key participants on the war on terrorism. They represent and meet real requirements of the war ascribed by end-users, and their transition to general use is assured by the fact that end-users have been part of the TSWG process from inception to ultimate product consumption.

Thank you, Mr. Chairman.

Mr. SHAYS. Thank you very much.

[The prepared statement of Mr. McCallum follows:]

TSWG's Role in Combating Terrorism

Mr. Edward J. McCallum
Director, CTTSO

National Security Subcommittee
Committee on Government Reform
September 29, 2003

Introduction.

Good afternoon, Mr. Chairman and members of the Committee. I am Edward J. McCallum, Director of the Combating Terrorism Technology Support Office (CTTSO).

My written testimony describes the mission, organization, processes and important successes of TSWG in support of the Global War on Terrorism.

Mr. Jakub has fully described the history of the TSWG. My oral testimony will emphasize organization, processes and a few selective successes.

TSWG's mission is to conduct the national interagency research and development (R&D) program for combating terrorism. It carries out this mission by providing technologies to support *both* armed forces overseas who are "bringing the fight" to the terrorist enemy wherever he is lodged *and* "first responders" here at home. TSWG-developed technologies are *not* proprietary to a particular user but frequently have application both to war fighters and first responders. Technologies are being used for offensive war fighting operations overseas and for defensive measures at home. Sensors and detectors assist in *preventing* incidents while other technologies help *mitigate* the consequences or *attribute culpability* for incidents should they occur.

Organization.

TSWG includes representatives from over eighty organizations across the Federal Government. These are listed on the first easel chart.

Departments and agencies, including representatives from "first responder" end user communities (fire, police, hazmat, bomb squads), participate in nine subgroups.[1] The organization is displayed in the second easel chart before you.

[1] Chemical, Biological, Radiological and Nuclear Countermeasures; Explosives Detection; Improvised Device Defeat; Infrastructure Protection; Investigative Support and Forensics; Personnel Protection; Physical Security; Surveillance, Collection and Operations Support; Tactical Operations Support.

Process.

TSWG operates under a highly successful, integrated "business model." It is portrayed in the third easel chart before you. In January, TSWG sponsors a "Threat Day" for distinguished experts to present their threat estimates. Threat Day helps inform the *definition* and *prioritization* of requirements by participants in the nine functional TSWG subgroups. Requirements definition/prioritization by ultimate users assures that R&D products produced by TSWG's rapid protyping will smoothly enter the marketplace or military acquisition process.

An Annual Program Briefing to Industry (APBI) in March briefs prospective vendors on TSWG requirements, invites industry comment and clarification and helps assures *responsive proposals* for the specific posted requirements in TSWG's Broad Agency Announcements (BAAs).

TSWG utilizes a *three step process* for managing the proposal process. It does so to economize resources on both the submission and evaluation ends of the process. TSWG recognizes that the preparation of good proposals requires substantial time and money commitments. It manages the selection process through the stages of quad charts, white papers and final proposals. The success rate of proposals submitted after successful white papers is quite high: perhaps nine out of ten.

The entire process of posting requirements, informing proposers on how to apply, managing responses and evaluating the three stages of proposals is all undertaken *electronically* in a BAA Information Delivery System (BIDS) which you are all welcome to visit. (URL: https:/www.bids.tswg.gov)

Successes.

I would like to discuss just a few representative successes of the TSWG prototyping activities. There are many more provided in the written testimony.

Here's what I believe to be distinctive about TSWG accomplishments:

- They represent *real* solutions to *real* problems encountered by key actors in the war against terrorism
- They meet real *requirements* of the war as defined by end users
- Their *transition* to general use is assured by the fact that end users have been part of the TSWG process from inception to ultimate product consumption

I would be happy to answer your questions.

TSWG's Role in Combating Terrorism

Mr. Edward J. McCallum
Director, CTTSO

National Security Subcommittee
Committee on Government Reform
September 29, 2003

Introduction

Good afternoon, Mr. Chairman and members of the Committee. I am Edward J. McCallum, Director of the Combating Terrorism Technology Support Office (CTTSO). The CTTSO is a DoD program office that manages interagency and international combating terrorism rapid-prototyping technology programs conducted under the auspices of the Technical Support Working Group (TSWG).

My testimony will describe the mission, organization and illustrative projects of TSWG.

TSWG was established in 1982 as a result of National Security Decision Directive (NSDD) 30 which assigned responsibility for the development of overall U.S. policy on terrorism to the Interdepartmental Working Group on Terrorism chaired by the Department of State. TSWG, an original subgroup, became the Interagency Working Group on Counterterrorism. In its February 1986 report, a cabinet level Task Force on Counterterrorism led by then Vice-President Bush cited the TSWG as assuring "the development of appropriate counterterrorism technological efforts."

TSWG today performs that counterterrorism technology development function as a stand-alone interagency working group. TSWG's mission is to conduct the national interagency research and development (R&D) program for combating terrorism requirements. Its technology and capability development efforts are balanced among the four pillars of combating terrorism: intelligence support; counterterrorism; antiterrorism; and consequence management.

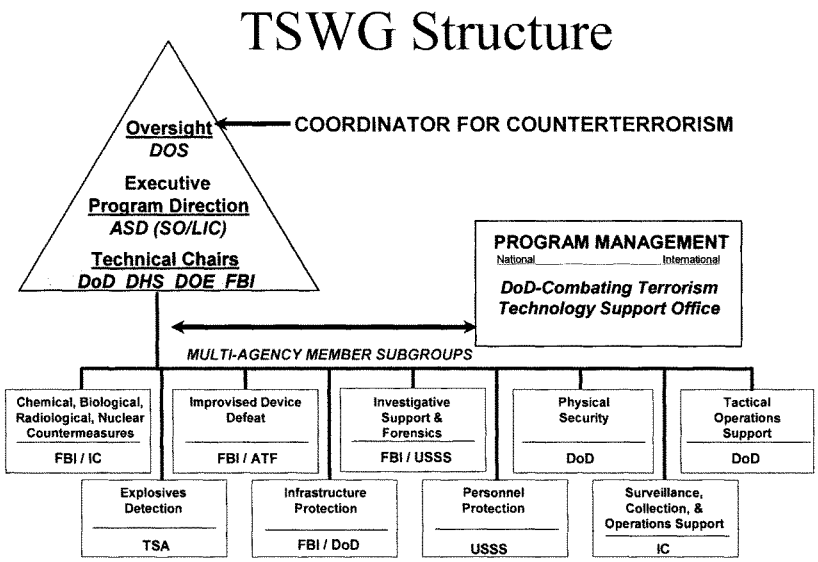
Structure.

TSWG operates under the policy oversight of the Department of State's Coordinator for Counterterrorism and the management and technical oversight of the Department of Defense (DoD) Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict (ASD(SO/LIC)). Participation is open to federal departments and agencies, including the Department of Homeland Security (DHS), our newest and important member.

As a result of Congressional direction for the TSWG to engage in joint counterterrorism R&D efforts with selected NATO and major non-NATO allies, the TSWG assumed an

international dimension in FY 1993. TSWG conducts cooperative R&D with the United Kingdom, Canada, and Israel through separate bilateral agreements.

TSWG membership includes representatives from over *eighty* organizations across the Federal Government. These departments and agencies work together by participating in one or more of nine subgroups. The nine subgroups are Chemical, Biological, Radiological and Nuclear Countermeasures; Explosive Detection; Improvised Device Defeat; Infrastructure Protection; Investigative Support and Forensics; Personnel Protection; Physical Security; Surveillance, Collection and Operations Support; and Tactical Operations Support. They are portrayed in the organization chart, below:



TSWG Membership

Department of Defense
- OASD (SO/LIC)
- OATSD (NCB)CP/CBD
- OUSD (A&T) DDR&E and S&TS/LW
- Defense Computer Forensics Laboratory
- Defense Intelligence Agency
- Defense Logistics Agency
- Defense Threat Reduction Agency
- National Reconnaissance Office
- National Security Agency
- The Joint Staff
- Unified Commands
- U.S. Special Operations Command
- U.S. Air Force
  - Air Combat Command
  - AFOSI
  - Force Protection Battle Laboratory
  - Force Protection System Programs Office
  - Security Forces Center
- U.S. Army
  - 52nd ORD
  - SBCCOM / ECBC
  - Corp of Engineers / WES / PMDC/WES
  - Criminal Investigations Command
  - Maneuver Support Center
  - Technical Escort Unit
  - National Guard Bureau
- U.S. Navy
  - JPO / STC
  - Naval Criminal Investigative Service
  - Naval Facilities Engineering Service Center
  - Naval Special Warfare
  - NEODTD / DTRG
- USMC Chemical Biological Incident Response Force

Department of Agriculture
- Food Safety and Inspection Service
- Office of the Inspector General
- Animal and Plant Health Inspection Service

Department of Commerce
- National Institute of Standards and Technology
  - Office of Law Enforcement Standards

Department of Energy
- National Nuclear Security Administration
- Office of Security
- Office of Energy Intelligence
- National Assessment Team

Department of Homeland Security
- Animal and Plant Health Inspection Service (Part)
- Critical Infrastructure Assurance Office
- Federal Emergency Management Agency
- Federal Protective Service
- National Infrastructure Protection Center
- Office of Domestic Preparedness
- Transportation Security Administration
  - Office of Civil Aviation Security
  - Technical Center
- U.S. Coast Guard
- U.S. Customs Service
- U.S. Secret Service
  - Forensic Services Division
  - Technical Security Division

Department of Health & Human Services/USPHS
- Food and Drug Administration
- Office of Emergency Preparedness

Department of the Treasury
- Office of Enforcement

Department of Justice
- Bureau of Alcohol, Tobacco, Firearms & Explosives
  - Explosives Technology Branch
  - Office of Laboratory Services
    - Forensic Science Laboratory
- Drug Enforcement Administration
- Federal Bureau of Investigation
  - Counterterrorism Division
    - WMD Countermeasures Unit
  - Laboratory Division
    - Bomb Data Center
    - Forensic Science Training Unit
    - Hazardous Materials Response Unit
- Federal Bureau of Prisons
- National Institute of Justice
  - Office of Science and Technology
- U.S. Marshals Service

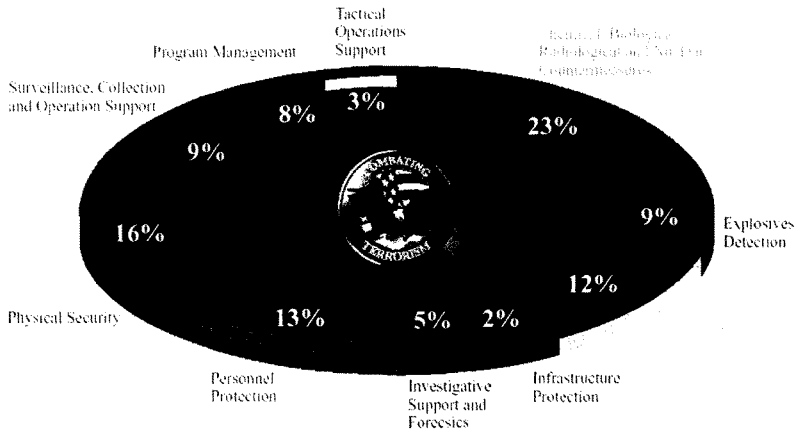
Department of State
- Office of the Coordinator for Counterterrorism
- Bureau of Diplomatic Security
- Foreign Buildings Operations

Department of Transportation
- Intelligence and Security Division
- Volpe Center

Independent Agencies
- Central Intelligence Agency
- Environmental Protection Agency
- General Services Administration
- Nuclear Regulatory Commission
- Office of Science and Technology Policy
- U.S. Capitol Police
- U.S. Postal Inspection Service
- U.S. Supreme Court Police

TSWG Program Funding.

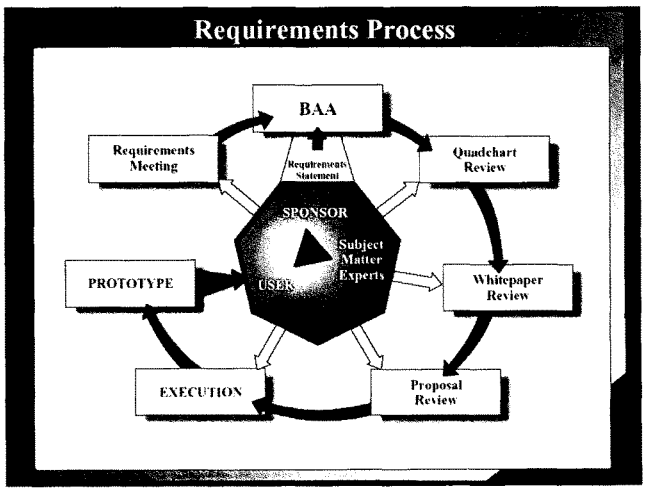
DoD funding for the Combating Terrorism Technology Support Program has increased from $6 million in FY 1992 to $108 million in FY 2003. I would point out that the Congress has been supportive of the program making significant increases for the last several years. Our interagency participants have also increased their funding to support the program from $2 million in 1992 to $72 million in 2003. These increases reflect the concern over terrorist activity and the recognized need to accelerate the development of technology to effectively address the threat. The Department of Defense has provided the bulk of funding for TSWG activities but the Department of State has also contributed annually to TSWG core funding. This year, The Department of Homeland Security has provided major funding of $30 million to TSWG. In general, agencies share the costs of selected projects. The breakdown of TSWG FY 2003 funding by subprogram is provided in the pie chart, below:



TSWG FY 2003 Program Funding ***(180 Million)***

Business Model for TSWG Operation.

TSWG has developed a business model which has well served its mission. It operates on an annual cycle. The chart below presents this business cycle.



In January of each year, TSWG organizes a "Threat Day," at which time distinguished experts in many fields relating to combating terrorism present their perspectives on the terrorist threats facing the country and world. This presentation helps inform the process of requirements definition which the subgroups undertake in February-March. Later in March, TSWG conducts an Annual Program Briefing to Industry (APBI) at which time it presents its draft requirements, inviting industry comment and educating industry on the requirements which drive the TSWG process. The in-cycle Broad Agency Announcement (BAA) is issued later in March, inviting the first of what is a three-step process of proposal submission. The timing of the annual BAA, with its comprehensive compilation of requirements, also dovetails into the supporting arguments for the President's annual budget.

Quad charts are the first submission, undertaken to minimize the time/expense of proposers while presenting the maximum number of creative opportunities and submissions to TSWG. The organization and content of a quad chart is provided below:

Quad Chart – Format

BAA Number: ***(Number of the BAA Announcement)***
Mission Area: ***(Title of Mission Area from BAA Package)***
Requirement Number: ***(Only 1 Per Chart)/(Document Identifier) (See para 3.1.5.1)***
Proposal Title: ***(Brief/short Title to describe offeror's proposed effort)***

Offeror Name
Date

Photograph or artist's concept of the project end-item. Ideally, this will convey the main idea of the final capability/use of the prototype. It should further give an idea of the size and weight of the end item.	**Operational Capability**: Describe how the system would provide new or enhanced operational capability to user agencies. Describe system specifications to be met. If known, list specific agencies that have expressed interest in this approach.
Proposed Technical Approach: Specifically, how will the problem be approached. Describe tasks to be performed. Describe any actions done to date. Describe any related on-going effort by the offeror. Describe the technology involved and how it will be used to solve the problem.	**Rough Order of Magnitude Cost and Schedule**: Provide any milestone decision points that will be required. Describe period of performance and total costs. If there are phases, provide funding per phase. **Deliverables**: Include all hardware and the following data deliverables: monthly status report, final report, test plans, test reports, specifications, computer program end items, user's manual, drawings, transition plan, etc. **Corporate Information**: You must include Offeror Name, POC full name, address, phone numbers and email.

TSWG typically receives several thousand quad charts, submitted to address about 50 requirements. About one in 10-20 quad charts are accepted for the next stage of review, a strictly formatted white paper review. The BAA provides 30 days for submission of quad charts. The quad charts are reviewed within 90 days. White papers are requested for

those proposals succeeding through the quad chart stage. Thirty days are provided for white paper submission. White papers are reviewed in 90 days. The final stage of submission is a full proposal. TSWG recognizes that it requires a good deal of time and money to prepare exceptional proposals. Thus, the success rate of proposals submitted after successful white papers is quite high: perhaps nine out of ten.

The process of review and final contract negotiation of successful proposals concludes in September – in time to capitalize upon budgets which open at the October of each successive fiscal year with ready contracts to obligate appropriated funds.

The entire process posting requirements, informing proposers on how to apply for R&D support against requirements, managing their responses, and evaluating the three stages of proposals is undertaken in an all electronic BAA Information Delivery System (BIDS) managed by the TSWG. (URL: https:/www.bids.tswg.gov)

TSWG undertakes a program review in the Fall of every other year. This review provides an opportunity for distinguished guests and agency members of the subgroups to review the status of each outstanding project and to see products displayed in the display area adjacent to the meeting room.

TSWG also undertakes BAAs "out of cycle." It has done so for several years for several agencies, e.g. The DoD Advanced Research Project Agency (DARPA), and, most recently, DHS.

TSWG undertook a $30 million BAA for DHS in May of this year. It requested quad charts to address *fifty one* requirements. It received 3344 quad chart responses. Completion of the quad chart reviews has been accomplished in TSWG sub-groups which include many of the constituent agencies now in DHS. Successful quad chart proposers have been invited to submit white papers and white papers are being evaluated presently in the subgroups. Full proposals are already negotiated for one or two subgroups and at least several negotiated contracts should be concluded by the end of this fiscal year. A detailed summary of the current status of the DHS BAA is presented in the chart below:

Submissions Accepted/Requested

AS OF 9/25/03 15:05 EDT

Subgroup	Reqts in BAA	Quad Charts Rcvd	Quad Charts Accepted	Full Purposals Requested
CB	25	1708	138	23
ED	2	220	14	
IDD	1	46	10	4
IP	6	421	14	
IS	7	343	19	5
PP	1	98	12	
PS	6	334	8	
SCOS	1	7	3	
TTD	2	167	0	
TOTALS	51	3,344	218	35 (3 Rqsts from QC)

This is an Active Source Selection in accordance with the FAR.

TSWG has welcomed DHS participation and looks forward to continuing participation in FY 04.

TSWG is also providing an information technology (IT) site for the announcement and receipt of proposals for the new Homeland Security Advanced Research Project Agency (HSARPA) within DHS. It will also provide technical assessment of unsolicited proposals received by the Science and Technology Directorate within DHS.

Complete information about the mission, organization, work flow process, budget and accomplishments of TSWG is available at its web site: http://www.tswg.gov.

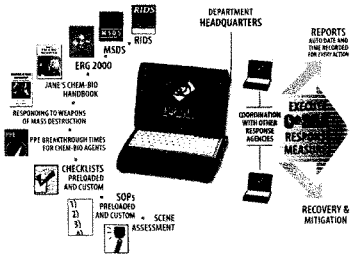
Accomplishments (Successes).

TSWG has been around long enough for its value to be tested by the products it has produced. In terms of both impressive and accelerated technological development and *utilization* of developed and deployed products in the marketplace, we are quite proud of TSWG's output.

In the paragraphs which follow, we provide several illustrative examples of TSWG successful technology development and deployment.

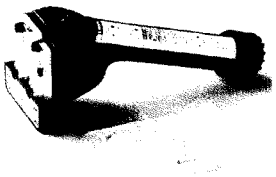
CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR COUNTERMEASURES

- Product: Chemical Biological Response Aid (COBRA)
- Price:
  - R&D: $700K
  - Commercial Cost: about $2000 for the software package that can be integrated into any laptop computer.
- Description: The COBRA system provides an affordable tool for the first responder. Through touch screen access, it incorporates a library of standardized procedures, data, and resource information for planning and managing response to a chemical, biological, or radiological terrorist incident. The system is currently being used by a wide variety of federal, state and local agencies. The FBI will provide a system for each accredited bomb squad in the US and the Department of State has purchased COBRA for use by the FEST. The Office for Domestic Preparedness is evaluating COBRA as a solution for their requirement to develop a handheld tool for the first responder. A version will also be available for the International community.

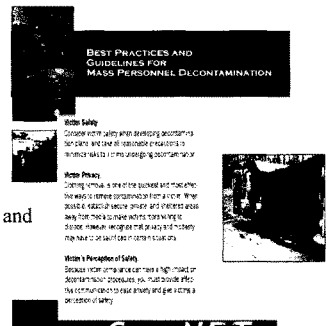


COBRA was recently used by the on-scene commander (Chicago Fire Department) during the TOPOFF 2 Exercise.

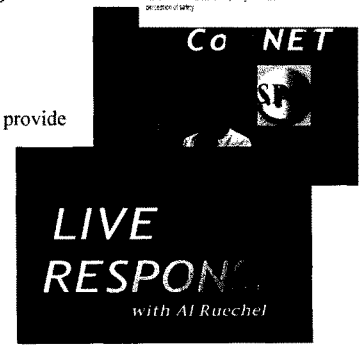
- Product: Chemical Detection and Sampling Kit (CDASK)
- Price:
  - R&D: $550K
  - Commercial Cost: TBD
- Description: The CDASK, a joint US/IS project, developed a new field chemical weapons detection kit, based on the Israeli Semi Automatic Chemical Agent Detector (SCAD), to enable first responders to rapidly identify the presence of chemical threats. It includes the development of new detection tickets to add capabilities for blood and choking agents (G, VX, H, CX, AC & CK). Prototypes are currently undergoing operational test and evaluation in the US.



- Product: Mass Personnel Decontamination Protocols
- Price:
  - R&D: $730K
  - Commercial Cost: $20 from CBIAC
- Description: The Mass Decontamination Protocols provide consensus best practices for the decontamination of the general civilian population. The protocols were developed with active participation of TSWG's UK and Canadian partners and the local U.S. public safety personnel through the Interagency Board. Users include DoD, DHHS, DHS, and local fire departments.

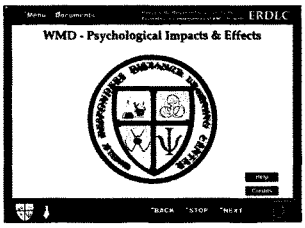


- Product: CoMNET and Live Response WMD Training Broadcasts
- Price:
  - R&D: $3M
  - Commercial Cost: N/A
- Description: The WMD Training Broadcasts provide accredited, objective-based information and training focused on awareness level WMD response to all response disciplines. The training is delivered via the Consequence Management News, Equipment, and Training (CoMNET) news magazine and the Live Response discussion panel. The DOJ Office of Domestic Preparedness and USFA (FEMA) Emergency Education Network



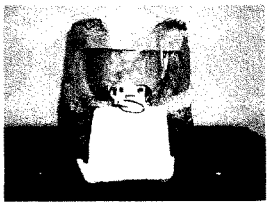
sponsor the programming. Users span the breadth of Federal, State, and local personnel involved in responding to WMD incidents.

- Product: WMD Psychological Impacts and Effects Training Course
- Price:
  - R&D: $500K
  - Commercial Cost: N/A
- Description: The WMD Psychological Impacts and Effects Training Course provides accredited training focused on recognizing, minimizing, and managing the severe psychological stresses associated with WMD incidents. Users span the breadth of Federal, State, and local personnel involved in responding to WMD incidents.



- Product: WMD Response Element Advanced Laboratory Integrated Training and Indoctrination (WMD-REALITI)
- Price:
  - R&D: $5M
  - Commercial Cost: N/A
- Description: The WMD-REALITI Course provides accredited training focused on the knowledge and skills required to work in fixed and mobile CBRN laboratory environments. While 3 of 4 course levels are still under development and validation, the National Guard Bureau has purchased delivery of the completed training for the next 5 years. Other potential users include Federal, State, and local personnel working in the Nation's laboratory reach-back network.

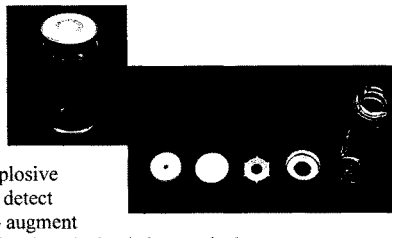
- Product: Escape Hood Testing
- Price:
  - R&D: $200K
  - Commercial Cost: ~ $100 each
- Description: Evaluate commercially available escape hood/mask concepts that provide at least 15 minutes protection in a CB environment that is safe and easy to use. Three commercially available masks have passed and a small profile mask prototyped. Department of Defense, Department of State, NSA and other federal agencies to include U.S. Capitol Police have purchased these masks.



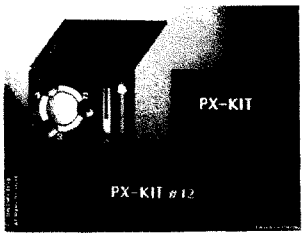
EXPLOSIVES DETECTION

- Product: Protocol for Rearing Bomb Detection Canines
- Price:
  - R&D: $808K
  - Commercial Cost: N/A
- Description: The Defense Science Technology Center developed protocols for canine rearing and assessed the impact of different rearing regimens on a canines ability to be trained for bomb detection. Results of this work demonstrated that canines exposed to kenneling early in their development performed better as working dogs. Currently 11 of the canines subjected to this study are in use by the UK Defense Animal Center (DAC). Three others are currently being trained for deployment to US airports. Based on DAC experience with this current set of canines they are considering making changes to their canine program. This was a joint US/UK effort.

- Product: Non-explosive Canine Training Aids
- Price:
  - R&D: $1.034M
  - Commercial Cost: TBD
- Description: Non-explosive odor replicants of Composite C-4, Semtex H and Nitroglycerin were developed to use in lieu of threat size quantities of explosives when training canines. This project demonstrated that the use of a non-explosive training aid does not diminish a canine's ability to detect explosives. These training aids provide a means to augment existing canine training scenarios where the use of real explosive is impractical. Transition to a commercial developer is being explored.



- Product: Tricycloacetone Triperoxide (TATP) Detection
- Price:
  - R&D: $430K
  - Commercial Cost: $30 each
- Description: This project focused on the development of a small, rapid, simple, sensitive, selective, and reliable test kit for detecting peroxide-based explosives such as TriAcetone TriPeroxide (TATP). This was a joint project under the bilateral agreement with Israel. Units are used by Israeli and US law enforcement agencies.

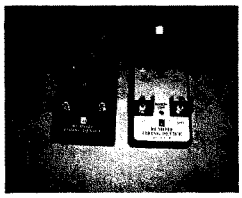


IMPROVISED DEVICE DEFEAT

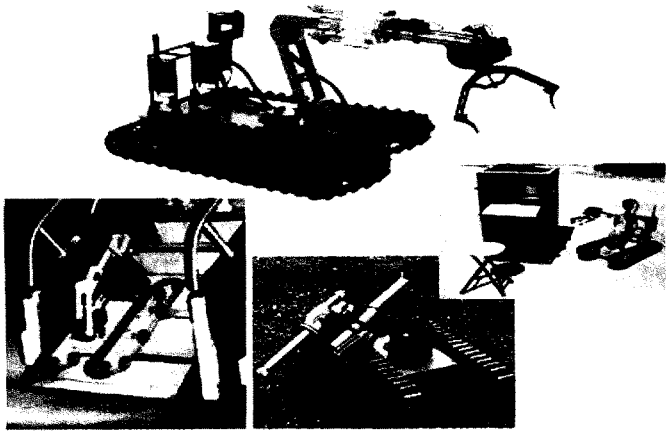
- Product: Critical Incident Response Technology Seminars (CIRTS)
- Price:
  - R&D: $1.2M
  - Commercial Cost: $150K per event
- Description: The CIRTS program provides bomb disposal technicians with the latest threat intelligence from the US and abroad, as well as exposure to developmental tools and techniques to counter the emergent terrorist threat. TSWG's international partners, the United Kingdom, Israel, and Canada, support the CIRTS program with briefings and technology demonstrations from subject matter experts.

- Product: Explosive Ordnance Disposal Expeditionary Back Pack
- Price:
  - R&D: $100K
  - Commercial Cost: $750.
- Description: The EOD Expeditionary Back Pack enables EOD Technicians in Afghanistan to carry all mission essential explosive materials on their person. The development was under a joint effort of TSWG and the Naval, Explosive Ordnance Disposal Technology Division, Indianhead. Users include Air Force, Army, Navy and Marine Corps EOD teams.

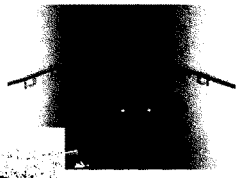
- Product: Low Cost, Radio Frequency Remote Firing Device
- Price:
  - R&D: $217K
  - Commercial Cost: $5K
- Description: The Low Cost, Radio Frequency, Remote Firing Device provides EOD Technicians with capability to remotely initiate detonators and shock tube at a safe distance of up to one kilometer. Users include Joint Service EOD teams and the federal, state and local bomb squads.

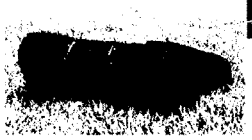


- Product: Next Generation Low Cost Robot
- Price:
  - R&D: $300K
  - Commercial Cost: $35K each
- Description: The VanGuard robot has been identified as a low cost replacement robot for the DoD EOD teams, as well as state and local bomb squads. Approximately 500 units are expected to be purchased by DoD EOD units and the FBI for use by accredited state and local bomb squads. This is a joint project under our bilateral agreement with Canada.

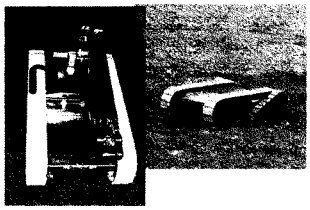


- Product: Urgent and Compelling Request for Matilda Robotic Platform
- Price:
  - Operational Cost: $150K
- Description: To support the USAF's Air Combat Command urgent and compelling requirement, TSWG located and arranged for the delivery of two Matilda man-portable robotic platforms to support operations in Iraq. These platforms had to be capable of operating in zero light and under fiber-optic control. Total time from notification to delivery to the war fighter – just over 48 hours.





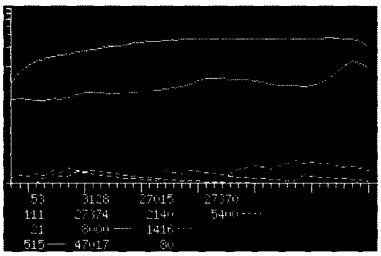
- Product: Urgent and Compelling Request for PackBot Robotic System
- Price:
  - Operational Cost: $285K
- Description: In support of an urgent and compelling request from the US Army, TSWG located and arranged for the delivery of five PackBot man-portable EOD/reconnaissance Robotic systems. These were used to assist the Commander, 101st Airborne Division, in providing point search and reconnaissance missions in Iraq. Total time from notification to delivery - 72 hrs.



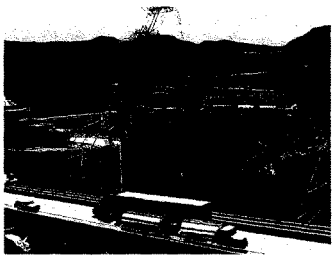
- Product: Percussion Actuated Non-Electric (PAN) Disruptor
- Price:
  - R&D: $250K
  - Commercial Cost: $3K each
- Description: The PAN is a disruption tool; i.e., it disrupts the firing circuitry or mechanism prior to detonation, to render safe improvised explosive devices. Its projectiles can include water, gel, semi-solid material, birdshot and plastic slugs. After being purchased and provided by the FBI, it has been integrated as an operational tool for all accredited state and local bomb squads, as well as DoD EOD units. Advanced tool ammunition and utilization tactics are continually upgraded. This product is commercially available.

INFRASTRUCTURE PROTECTION

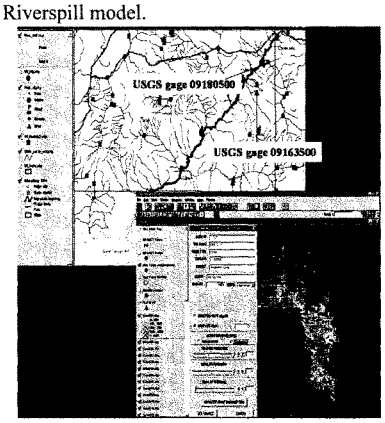
- Product: Alert Trend Change Detection Tool
- Price:
  - R&D: $800K
  - Commercial Cost: No cost to government agencies for the software. MIT is providing licenses for commercial use.
- Description: The Alert Trend Change Detection Tool is software application that enhances computer network security by providing the administrator with an alarm and a visual depiction of increase scans against ports and services on the network. This variation in network traffic has been proven to be indicative of an impending attack. This tool used in concert with an intrusion detection system and a firewall provides a greater measure of security to the user's information network. The system is currently installed in the FAA computer security incident response center for the protection of their administrative systems.



- Product: Risk Assessment Methodology for Dams
- Price:
  - R&D: $575K
  - Commercial Cost: None
- Description: The Risk Assessment Methodology for Dams provides a comprehensive assessment methodology for dam owners and operators to evaluate the vulnerabilities of their facilities in terms of threat, capabilities, and consequences. This risk based approach allows assessment teams to not only capture the current state of the facility but also to develop a risk reduction package that can be used to minimize or mitigate the vulnerabilities. This methodology was developed with the participation of the Interagency Forum on Infrastructure Protection. Users include DoD, DHS, Bureau of Reclamation, Bonneville Power Association, Tennessee Valley Authority, and the Office of Critical Infrastructure Protection and Emergency Preparedness of Canada.

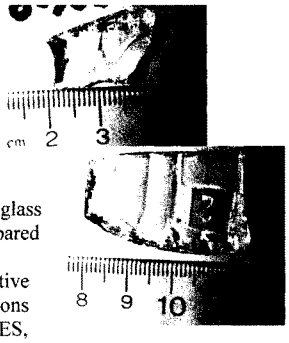


- Product: Water Flow Modeling
- Price:
  - R&D: $675K
  - Commercial Cost: $50K-$75K per region entered into PipelineNet model. No cost to government users of Riverspill model.
- Description: The Water Flow Model is a software tool that traces the "fate and transport" of contaminants in a natural or man-made water distribution system. The tool is built on two models called Real-time Riverspill Model (Riverspill) for surface water systems and Pipeline Network Model (PipelineNet) for man-made distribution systems. This tool may be used to track a continuous or point release of a constituent as it propagates a system. The current users of the Riverspill model are DoD, DHS, EPA, USDA (FS), USGS, Washington Department of Ecology, and Philadelphia Water Department. The current users of the PipelineNet model are the 5 cities associated with the Salt Lake City Olympics, the East Bay Municipal District in San Francisco, AWWA, CDC, EPA, and Agency for Toxic Substances and Disease Registry.



INVESTIGATIVE SUPPORT & FORENSICS

- Product: Improved Forensic Glass Analysis Reference Database
- Price:
  - R&D: $253K
  - Commercial Cost: None
- Description: The Improved Forensic Glass Analysis Reference Database provides a comprehensive analytical and forensic reference for analyzing and comparing known and unknown samples of float, container, and headlamp glass by inductively couple plasma mass spectrometry. The reference and database provides trace element profiles for 500 float glass samples which allows an unknown sample to be compared with a known one in the database providing a determination of origin. This gives highly discriminative results for glass evidence used in terrorism investigations not previously possible. Users are the FBI, NIST-OLES, and U.S. Army Criminal Investigation Command.



- Product: Superglue Chamber
- Price:
  - R&D: $173K
  - Commercial Cost: $20K
- Description: A safe, consistent method of applying the very successful ethyl cyanoacrylate (superglue) treatment on larger articles; e.g., car doors, to reveal latent fingerprints was developed. In particular it is able to process large vehicle parts and large areas of plastic wrapping material quickly and effectively. Production systems have been developed and a small number of chambers have been installed in UK law enforcement agency labs. This was a joint project conducted under our bilateral agreement with the UK. A chamber was delivered to the US Secret Service laboratory in May 2002.

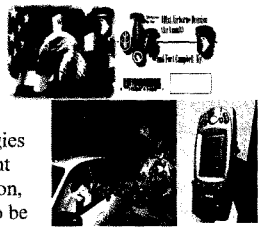
PERSONAL PROTECTION

- Product: Body Armor Cooling
- Price:
  - R&D: $545K
  - Commercial Cost: ~$300/ set
- Description: The system provides personal cooling under body armor and other protective clothing by removing heat through a circulating water system that is cooled in a heat exchanger that is worn in a typical camelback pack. The system maintains temperature based on the return temperature to the circulating pump and as body temperature rises, flow is diverted to the heat exchanger through a thermostatically controlled valve. A second design update based on user input has been completed. The system has been subjected to field testing for operator feedback and acceptability, and has been strongly endorsed by various user groups. It has recently completed environmental testing to obtain objective performance data, and it provided good cooling in high heat environment, allowing significant increased effectiveness of wearer. Some minor design changes will be included, and a larger number of systems will be manufactured for broader user evaluation in hot climates such as CENTCOM.

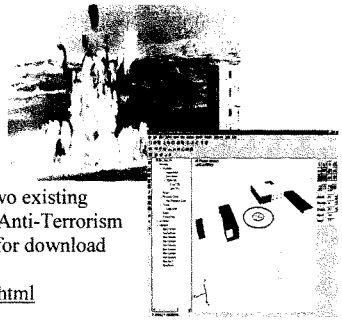
- Product: Hybrid Composite Armor Design
- Price
  - R&D: $204,000
  - Commercial Cost: N/A (Design can be used in a number of applications)
- Description: Fabrication and testing of the hybrid design was completed and independent government testing using armor piercing 7.62 rifle rounds was conducted. Performance of the design was validated in testing. The design has been applied to small arms plate inserts (SAPI) for use by U.S. Forces in Afghanistan and Iraq.

PHYSICAL SECURITY

- Product: Advanced Vehicle Driver Identification System (AVIDS)
- Price:
  - R&D: $1.3M
  - Cost: Less than $50K for each entry gate
- Description: AVIDS is an entry-point screening aid, providing information about the vehicle and driver to screening personnel at an entry point. The system is modular in design, so that an appropriate suite of technologies can be applied in any given screening environment. Current technologies include RF tagging, bar codes, weigh-in-motion, biometrics, and license plate reader. Additional modules to be added in the near future include an automated under carriage alarm system and Arabic license plate reader. AVIDS can be operated in either a stand-alone or networked configuration. The network configuration is currently in use by the U.S. Army at Ft. Campbell, KY with planned stand-alone configuration deployments to U.S. Air Force and Navy Central Command region facilities.

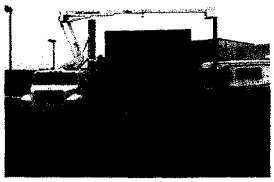


- Product: Blast Effects Estimation Model (BEEM)
- Price:
  - R&D: $1.673M
  - Commercial Cost: No Cost
- Description: BEEM provides a single model capable of estimating the effects of blasts, fragmentation, building damage and personal injury. BEEM incorporates the best features of two existing models: the Force Protection Tool (FPT) and the Anti-Terrorism Planner (AT- Planner) Tool. BEEM is available for download and use at the site below. https://pdmcx.pecp1.nwo.usace.army.mil/index2.html

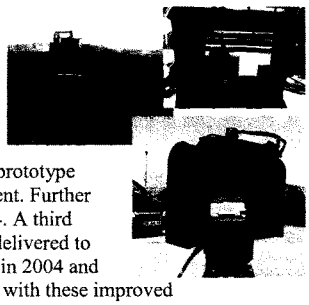


- Product: High Volume Mail Room Scanner (HVMRS)
- Price:
  - R&D: $710K
  - Commercial Cost: TBD
- Description: A portable high-volume mail scanner was developed to rapidly scan and segregate parcels and flat mail that may contain improvised explosive devices and radiological threats. Two prototype systems were produced. One was deployed for security operations at the 2002 Olympics in Salt Lake City and is currently in operation at the Pentagon. The remaining unit is scheduled to be deployed to a U.S. military postal center in Germany.

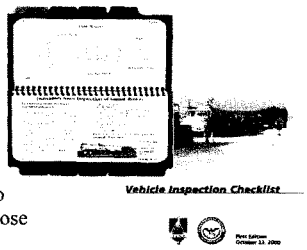
- Product: Mobile Vehicle and Cargo Inspection System (MVACIS)
- Price:
  - R&D: $7.3M
  - Commercial Cost: $955K
- Description: MVACIS, a mobile gamma radiation imaging system, was fielded for the inspection of vehicles and cargo. The system provides x-ray image quality of scanned objects, and its mobility allows operators to reposition the system as a random anti-terrorism measure. It has been employed by DoD to U.S. Navy, Army, and National Guard units stationed in the United States and two units are deployed in support of the Army in Central Command region.



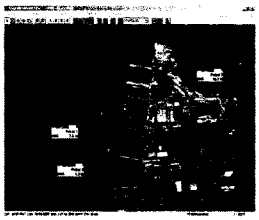
- Product: Stabilized Panoramic Intruder Detection and Recognition System (SPIDER)
- Price:
  - R&D: $3.273M
  - Commercial Cost: TBD
- Description: The SPIDER project focuses on developing an automatic long-range surveillance system to locate intruders using day and night video imaging. A prototype system has successfully located human and vehicular targets at a long distance. U.S. Central Command is field testing two prototype systems in 2003 in an operational military environment. Further field-testing of these prototypes is scheduled for 2004. A third prototype system with improved capabilities will be delivered to TSWG and field-tested by the Department of Energy in 2004 and 2005. TSWG plans to retrofit the first two prototypes with these improved capabilities.



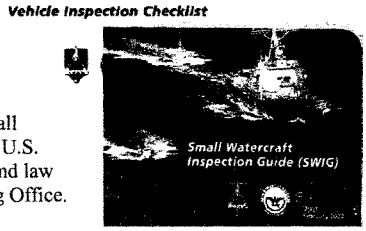
- Product: TSWG Vehicle Inspection Checklist Training Support Package
- Price:
  - R&D: $200K
  - Commercial Cost: $117 from GPO
- Description: The Vehicle Inspection Checklist Training Support Package provides a standardized approach to implementing the TSWG Vehicle Inspection Checklist. The package integrates paper and digital training materials for use in classroom, hands-on, and train-the-trainer applications. Users include Federal, State, and local security personnel who may be involved with inspection of vehicles that may pose a terrorist bomb threat.



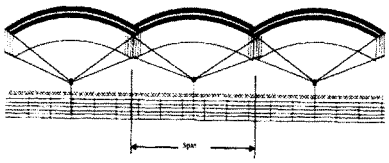
- Product: Vessel Identification and Positioning System (VIPS)
- Price:
  - R&D: $2.5M
  - Commercial Cost: Dependent on selected system configuration
- Description: The VIPS, by interrogating shipboard transponders, provides an automated real-time display for port security managers within a harbor. The initial prototype system was used at Norfolk Naval Station. VIPS is now deployed in Boston Harbor in support of U.S. Coast Guard operations. Ship-borne radar data and dynamic protection zone capability have been integrated thus improving operators' situation awareness of their surroundings. The system is being deployed in support of U.S. Naval operations in Central Command and European Command. The U.S. Coast Guard is planning to deploy the system at five domestic ports.



- Product: Force Protection "Pocket Tools"
- Price:
  - R&D:
    - VIC - $453K
    - SWIG - $147K
  - Commercial Cost:
    - VIC - $13.80 each
    - SWIG - $8.50 each
- Description: Pocket-sized reference guides were developed to aid DoD Force Protection, federal, state, and local security personnel in the inspection of vehicles and small watercraft. Over 36,000 copies have been delivered to U.S. agencies and Canada. Both are available for security and law enforcement agencies through the Government Printing Office.



- Product: Quick Reaction Perimeter Intrusion Detection System (QUPID)
- Price:
  - R&D: $450K
  - Commercial Cost: $7.5K each
- Description: QUPID projects a "virtual fence" beyond a hard barrier, to provide perimeter intrusion detection sensing of human intruders in high clutter environments. It is an ultra wideband radar tuned to reduce false alarms. It has been deployed to Afghanistan.



Conclusion

The Technical Support Working Group is a novel and successful model of inter-agency coordination directed toward prototyping technologies to combat terrorism. It has benefited from user requirement based perspectives which have focused developmental efforts on technological approaches likely to bear fruit and most assuredly to have application in the field.

Now representing over eighty agencies, including the Department of Homeland Security, and involved in hundreds of on-going projects, TSWG looks forward to a continuing contribution to a most urgent national challenge.

Mr. SHAYS. Dr. Bolka.

Dr. BOLKA. Thank you.

Good afternoon, Mr. Chairman, members of the subcommittee——

Mr. SHAYS. Doctor, could I have you just move that mic a little closer to you?

Dr. BOLKA. A little closer?

Mr. SHAYS. Yes, it helps.

Dr. BOLKA. Is that better?

Mr. SHAYS. Much better.

Dr. BOLKA. Thank you.

I am Dr. David F. Bolka, Director of the Homeland Security Advanced Research Projects Agency [HSARPA], we wish we had a better acronym, but we don't.

I'm pleased to appear before you this afternoon to discuss our relationship with the Technical Support Working Group [TSWG]. In your letter you ask several questions about this relationship. I trust that my testimony, in combination with that of Mr. McCallum and Mr. Jakub, addresses all of them.

As you know, HSARPA was created by the Homeland Security Act of 2002. The responsibilities of the Director are specified in that act. Paraphrasing in the area of research and development we support both basic and applied homeland security research to promote revolutionary changes. That's about 10 to 15 percent of our budget in the technology to promote homeland security. We advance the development, testing and evaluation, and deployment of critical technologies and also we have a prototyping, rapid prototyping mission, and that's the third part of our mission.

This is the one area where our mission and that of the TSWG overlap the most. Many of our DHS user agencies have worked with TSWG in the past and continue to do so. Mr. McCallum has described some of the technology that TSWG has brought forward for them. I don't see this overlap and rapid prototyping responsibilities as either debilitating or wasteful. There is sufficient work for all of us to develop these technologies.

As Mr. McCallum described, in 2003, while HSARPA was being organized and hiring staff, we provided funds for a combined DHS/TSWG Broad Area Announcement that was issued on May 14, 2003. This BAA listed 51 top priority research and technology needs that we share with TSWG.

DHS staff members have participated in working groups with TSWG and have helped evaluate many of the quad charts and white papers that were submitted in response. We also participated in evaluating the proposals that result from this solicitation, and our requirements were incorporated in the solicitation. We're represented currently on the executive committee by my Deputy Director, Dr. Jane Alexander, and in several working groups by S&T staff members and other DHS members.

Last Tuesday, HSARPA issued its first research announcement for detection systems for biological and chemical countermeasures. This announcement begins our work on the next generation of biological and chemical sensors and systems. The research announcement solicits white papers leading to proposals from industry, academia, and laboratories in five technical topic areas, two biological

and three chemical. We are using TSWG'S established BID system to publish the research announcements, to electronically register those who respond, to collect their white papers and to distribute them to technical reviewers.

This morning we held a bidders' conference here in Washington to provide detailed information to potential bidders. There were somewhat over 300 people who attended that bidders' conference.

In HSARPA we have an approved staffing plan that will see staffing to about 50 percent of the authorized scientific and technical head count early in 2004, reaching about 100 percent by late summer. We receive legal, security, facilities, and administrative support from our DHS Management Directorate. Our first contracting officer and attorney have been assigned. Also, I have seven technical/scientific professionals on board at this point.

As HSARPA develops its own capability to solicit the country's best technical ideas, concepts, technologies, and systems, we will rely less on the TSWG infrastructure and more on our own. It's worth noting that our development involves not only creating the ability to solicit and evaluate, but the simultaneous capability to execute high-quality research and to execute programs as we proceed.

For fiscal year 2004, just under 25 percent of the HSARPA budgets will be expended in rapid prototyping. We expect that TSWG will perform this function with us in the near term with our participation. In a statement before the House Appropriations Subcommittee on Homeland Security last April 10, DHS Under Secretary for Science and Technology, Dr. Charles McQueary, said the Science and Technology Directorate would establish a partnership with the Technical Support Working Group. We have done that.

To implement that partnership, DHS requested $30 million in fiscal year 2004 to solicit near-term capabilities that can be rapidly prototyped and fielded, but Congress has increased this funding to $75 million in the fiscal 2004 appropriation. That's why the percentage of our budget for private prototyping has gone from roughly 10 percent to about 25 percent.

As HSARPA matures and the Systems Engineering and Development branch of the S&T Directorate staffs up, we will assume the majority of rapid prototyping responsibility and we'll coordinate it internally with our S&T developments. We will continue to fund TSWG to perform rapid prototyping work when it is mutually beneficial.

Over the next few months, we will continue to refine and will document our working relationships with the TSWG. Our intent is to fulfill the clear intent of the establishing legislation and to execute the full scope of HSARPA functions as rapidly as staff and facilities can be assembled. We believe that TSWG experience and facilities can help us achieve that goal in the near term, and under any foreseeable circumstances, we will retain our position on the TSWG executive board to collaborate, share information, join in mutually interesting developments, avoid unnecessary development

duplication, and derive mutual benefit from our continuing association.

Subject to any questions you may have, Mr. Chairman, that concludes my testimony.

Thank you.

[The prepared statement of Dr. Bolka follows:]

David F. Bolka, Ph.D.
Director, Homeland Security Advanced Research Projects Agency
Department of Homeland Security

TESTIMONY
COMMITTEE ON GOVERNMENT REFORM
SUBCOMMITTEE ON NATIONAL SECURITY, EMERGING THREATS AND INTERNATIONAL RELATIONS
HON. CHRISTOPHER SHAYS, CONNECTICUT, CHAIRMAN
September 29, 2003, 2:00PM
Rayburn House Office Building, Room 2154

Good afternoon Mr. Chairman, Members of the Subcommittee, Subcommittee staff, I am Dr. David F. Bolka, Director of the Homeland Security Advanced Research Projects Agency (HSARPA). I am pleased to appear before you this afternoon to discuss our relationship with the Technical Support Working Group (TSWG).

Your letter asked several questions about this relationship. I trust my testimony, in combination with that of Mr. McCallum and Mr. Jakub, addresses all of them.

As you know, HSARPA was created by the Homeland Security Act of 2002. Our responsibilities specified in the Act are described as follows:

The Director shall administer the Fund to award competitive, merit-reviewed grants, cooperative agreements or contracts to public or private entities, including businesses, federally funded research and development centers, and universities.

The Director shall administer the Fund to--
(A) support basic and applied homeland security research to promote revolutionary changes in technologies that would promote homeland security;
(B) advance the development, testing and evaluation, and deployment of critical homeland security technologies; and
(C) accelerate the prototyping and deployment of technologies that would address homeland security vulnerabilities.

The third part of our mission is rapid prototyping. This is one area where our mission and that of the TSWG overlap somewhat. Many of our user agencies have worked with TSWG in the past and continue to do so. Mr. McCallum has described some of the technology TSWG has brought forward for them. I do not see this overlap in rapid prototyping responsibilities as either debilitating or wasteful. There is sufficient work for all of us in developing technologies that strengthen our security.

As Mr. McCallum described, in 2003, while HSARPA was being organized and beginning to hire staff, we provided funds for a combined DHS/TSWG Broad Area Announcement (BAA) that was issued on May 14, 2003. This BAA listed fifty-one top priority research and technology needs that we share with TSWG. The DHS S&T staff have participated in working groups with TSWG and helped evaluate many of the quad charts and white papers that were submitted in response. We also participate in evaluating the proposals that result from this solicitation.

DHS (S&T) is represented on the TSWG Executive Committee by my Deputy Director, Dr. Jane A. Alexander, and in several working groups by S&T staff.

Last Tuesday, HSARPA issued its first Research Announcement for Detection Systems for Biological and Chemical Countermeasures. This announcement begins our work on the next generation of biological and chemical sensors and systems. The Research Announcement solicits white papers, leading to proposals from Industry, academia and laboratories in five Technical Topic Areas – two biological and three chemical. We are using TSWG's established BAA Information Delivery System to publish the research announcement, to electronically register those who respond, to collect their white papers, and to distribute them to technical reviewers in HSARPA. This morning, HSARPA held a Bidders' Conference here in Washington to provide detailed information to potential bidders.

We have an approved staffing plan that will see HSARPA staffed to 50% of authorized scientific and technical headcount early in 2004, reaching nearly 100% by late summer. We receive legal, security, facilities, and administrative support from our DHS Management Directorate; our first contracting officer is assigned.

As HSARPA develops its own capability to solicit the country's best technical ideas, concepts, technologies and systems, we will rely less on the TSWG infrastructure and more on our own. It is worth noting that HSARPA's development involves not only creating the ability to solicit and evaluate, but the simultaneous capability to execute high quality research and development programs as we proceed.

For FY-04, about 10% of the HSARPA budget will be expended in rapid prototyping. We expect TSWG will perform this function for us for the near term. In his statement before the House Appropriations Subcommittee on Homeland Security last April 10th, DHS Under Secretary for Science and Technology, Dr. Charles McQueary, said that the Science and Technology Directorate would establish a partnership with the Technical Support Working Group. To implement that partnership, DHS requested $30M in FY04 to solicit near-term capabilities that can be rapidly prototyped and fielded. The Congress has increased this funding to $75M in the FY04 Appropriation.

As HSARPA matures, and the Systems Engineering and Development branch of the S&T Directorate stands up, we will assume the majority of the rapid prototyping

responsibility and will coordinate it internally with our S&T developments. We will continue to fund TSWG to perform rapid prototyping work when it is mutually beneficial. Over the next few months we will continue to refine and will document our working relationships with TSWG.

Our intent is to fulfill the clear intent of the establishing legislation and execute the full scope of HSARPA functions as rapidly as staff and facilities can be assembled. It is our view that the TSWG experience and facilities can help us achieve that goal in the near term. Under any foreseeable circumstances we will retain our position on the TSWG Executive Board to collaborate, share information, join in mutually interesting developments, avoid unnecessary development duplication, and derive mutual benefit from our continuing association.

Subject to any questions you may have, Mr. Chairman, this concludes my testimony.

Mr. SHAYS. I thank you very much.

In making reference to the Technical Support Working Group, I referred to it as TSWG and my staff director said, It's TSWG, and I said, "No grown man would say those words." and now you make me feel very comfortable; I'll be the fourth to do it. That's what we've been referring to it as for the last 10 years?

Dr. BOLKA. Yes, sir.

Mr. SHAYS. OK.

Let me just take care of some business first and recognize that Mr. Tierney is here and I thank him very much. It gives me the opportunity to ask unanimous consent that all members of the committee be permitted to place an open statement in the record and the record remain open for 3 days for that purpose.

Without objection, so ordered.

I ask further unanimous consent that all witnesses be permitted to include their written statements in the record, and without objection, so ordered.

I'd like to start out with Dr. Bolka, and just have me be comfortable with what we've done with the Department of Homeland Security.

We basically established the Department with 185,000-plus folks. This was the committee that had the responsibility for reorganization, and I was very comfortable in supporting that. It had basically four legs to this operation. It had the Under Secretary of Science and Technology, Under Secretary of Information Analysis and Infrastructure Protection, and then another Under Secretary for Border and Transportation Security and finally the Under Secretary of Emergency Preparedness and Response. I feel like these tables are much different sizes here. Obviously, Border and Transportation Security is a pretty huge part of DHS.

How many employees work under Science and Technology?

Dr. BOLKA. I don't know, Mr. Chairman, but I will find out and——

Mr. SHAYS. How many work under your particular part of that?

Dr. BOLKA. In Science and Technology, we have an authorization of 180 end strength.

Mr. SHAYS. OK. Under Science and Technology, total?

Dr. BOLKA. Yes.

Mr. SHAYS. That's what I meant, but we're now under HS—your particular area—in HSARPA.

Dr. BOLKA. I have a staffing plan which will get me to approximately 135 staff, 62 of which are government, and the rest would be support contractors.

Mr. SHAYS. And that's out of a total amount, within this directorate, of how many?

Dr. BOLKA. About 108 government employees. I'd have about a third of them.

Mr. SHAYS. Now, going on to you, Mr. Jakub and Mr. McCallum, I am trying to think about the hearing we had way back in March 2000, and putting in perspective today, since obviously a lot's happened since then, with September 11.

I don't quite have a grasp of—TSWG is basically in the Department of Defense, but it is under the jurisdiction of the Department of State?

Mr. JAKUB. TSWG, as I mentioned——

Mr. SHAYS. Trying to confuse me?

Mr. JAKUB. TSWG, as I mentioned during the testimony, came as a result of a finding that was in the Vice President'S Task Force Report. The Department of State was asked to take on that job.

Mr. SHAYS. And that's in 1980, 1989?

Mr. JAKUB. 1986.

Mr. SHAYS. 1986?

Mr. JAKUB. Yes. We exercise program direction and policy oversight over the program. It's executed by the Department of Defense, so it's a joint State-Defense effort. That was done deliberately so we wouldn't have to create another extra bureaucracy within the State Department to handle this, and that's how it came about.

Mr. SHAYS. So is it funded out of DOD?

Mr. JAKUB. It's funded out of both. Both of us contribute money to what we call "core funding."

Mr. SHAYS. Then who ultimately is in charge? I'm not clear, as to my knowledge of who ultimately is in charge.

Mr. JAKUB. Who ultimately is in charge for program direction and overall policy oversight of the program is my boss, Ambassador Black, the Coordinator for Counterterrorism. Mr. O'Connell, who is the Assistant Secretary for Special Operations and Low-Intensity Conflict, is in charge of program execution.

Mr. SHAYS. OK. And if there's a disagreement between the two, who trumps whom?

Mr. JAKUB. We haven't ever gotten to that point, to be very honest with you. It's been run from Day One and we have never run into that problem.

Mr. SHAYS. When I looked at the number of folks involved, I had this sense that Department of Homeland Security was going to be basically the one that evaluated any proposals that would impact the Department of Homeland Security. But I'm obviously wrong, so Dr. Bolka, tell me how it works.

Dr. BOLKA. My understanding, Mr. Chairman, is, and my experience in the previous BAA is, that members of Homeland Security user groups, and in my case, members of—technical members of my staff, participate in the evaluation of the quad charts, the white papers, and the proposals. They also meet, as you saw in Mr. McCallum's chart, to set requirements; and so our requirements are incorporated with the other requirements to ensure that they're all addressed and there is no duplication. Then, once the program has been executed, the results are reported to all those who are participating.

Mr. SHAYS. But basically the proposals go to TSWG; they don't go to you?

Dr. BOLKA. If that's the mechanism that we set out, that's correct.

Mr. SHAYS. I don't understand if.

Dr. BOLKA. OK.

Mr. SHAYS. In other words, it hasn't been decided?

Dr. BOLKA. No. In the case of the BAA that we had last summer, the proposals did go to TSWG. We sent the money to TSWG, and

TSWG will be executing the programs that result from the proposals.

In the case of our recent research announcement, which we held a bidders' conference for today, we are using the TSWG infrastructure to collect the white papers and to assign for evaluation those that come in prior to selecting them. In this case, my program managers will be running the programs that result from this. There will be full visibility for all of the members of TSWG as to what we're doing, so there will be no—little duplication, if possible.

Mr. SHAYS. Maybe I'll understand it better this way.

Dr. BOLKA. OK.

Mr. SHAYS. Why didn't we put TSWG under the Department of Homeland Security?

Maybe Mr. Jakub, Mr. McCallum, you can tell me why we didn't.

Mr. MCCALLUM. Yes, sir, Mr. Chairman.

As I mentioned in my brief testimony, a subset of what we do in combating terrorism is involved in homeland defense and the defense of items and facilities and personnel within the domestic United States.

Another large part of what we do is in support of the offensive war on terrorism overseas, in support of the State Department and the Intelligence Community and the Department of Defense.

The technologies that you'll see and talk about in a few moments, like the chem-bio suits in front of you, can easily be used by soldiers on the battlefield or HAZMAT teams in St. Louis. The robots that you'll see demonstrated are used by military explosive ordnance disposal teams to address the improvised disposal device, devices we're seeing used in the Middle East or by teams that your own Capitol Police use, systems that we develop.

The technology isn't specific to a stovepipe of users or an item turf. We develop technologies for all users; and within our subgroups, they are all represented and they take the parts that they need to fulfill their missions back to their home organizations, whether it's the Department of Defense, the Department of State or the Department of Homeland Security.

Mr. SHAYS. Now, you have nine subgroups, correct?

Mr. MCCALLUM. Yes, sir.

Mr. SHAYS. Yes. How many people—I'm trying to visualize, and they come from all these various departments.

Maybe I need to be clear: How many do you have on your staff under TSWG?

Mr. MCCALLUM. I have approximately 70 people today, sir.

Mr. SHAYS. And is that a full complement?

Mr. MCCALLUM. That's a full complement. That's approximately 20 program managers, scientists, engineers, and operators, approximately 20 contracting and security support people from DOD, and the rest are support contract people from specific technical organizations that we need to support.

Mr. SHAYS. Mr. Jakub, how many people do you have in yours?

Mr. JAKUB. Two.

Mr. SHAYS. OK.

Now, do you work out of the State Department?

Mr. JAKUB. Yes, sir.

Mr. SHAYS. You're at the Pentagon, Mr. McCallum?

Mr. MCCALLUM. Yes, sir.

Mr. SHAYS. And, when you have your meetings, you're meeting—I'm trying to visualize—I understand and I appreciate that obviously the research that's going to happen is going to impact both foreign and domestic. It can impact the military; it can impact so many different folks that obviously, in that way, I can see why it wouldn't be under the Department of Homeland Security. But I'm just having a little bit of a difficult time trying to visualize how it works in practice.

Do people go to the Pentagon? Do you have periodic meetings with each of these nine subgroups? Just walk me through that a little bit.

Mr. MCCALLUM. Actually, our offices are in Crystal Gateway North, just across the parking lot from the Pentagon.

Mr. SHAYS. OK.

Mr. MCCALLUM. And we have a series of offices.

Mr. SHAYS. Does that make it easier—excuse me for interrupting, but does that make it easier for people to access you?

Mr. MCCALLUM. It's much easier to get into our office than it is the Pentagon.

Mr. SHAYS. OK.

Mr. MCCALLUM. It's right off the Metro. We host a number of meetings.

As I said, we have requirements meetings during the year when all of the subgroup members—and there are approximately 300 members, but if I just talk our Chemical, Biological, Radiological, and Nuclear Countermeasures Subgroup, the last subgroup meeting I sat in on had approximately 40 people from across the government contributing to the requirements process and voting up or down on different proposals.

The discussion is on a technical basis. It's on—we also look at how many agencies these technologies will benefit. If there is a single agency it's going to benefit, we usually ask them to fund it out of their core budgets. If it's multiple agencies, because we have an interagency role, it moves up the line, so we talk to funding organizations and make sure that the highest priorities in R&D are accomplished.

Mr. SHAYS. Well, how do you guarantee or feel comfortable about the different departments that come with their own perspective, that ultimately—in this process of deciding, is it a formal vote? Is it?

Mr. MCCALLUM. Yes, it is.

Mr. SHAYS. How do you know that it's weighted in a way that's going to bring the best benefit to the United States?

For instance, let me ask, while you think how to respond to me—Dr. Bolka, I would think the Department of Homeland Security would be in most of those different subcategories?

Dr. BOLKA. All of those that apply to homeland security.

Mr. SHAYS. Chemical and biological, explosives, infrastructure protection, personnel protection, physical security, tactical operations.

Tell me. If you don't know, would you tell me—would you get the answer to this question? How many people—are you so new that you're not yet integrated?

Dr. BOLKA. I'm sorry?

Mr. SHAYS. Are you so new that you're not yet integrated in each of these subgroups?

Dr. BOLKA. Our DHS components have been integrated for some time; for example, Immigration, TSA, Border Security and so on have been integrated for some time.

Mr. SHAYS. Right.

Dr. BOLKA. Before even DHS existed. Those relationships continue. Really, the only new player is the DHS Science and Technology, and we're in the process of becoming integrated, right now.

Mr. SHAYS. OK, Mr. Tierney, you have the floor.

Mr. TIERNEY. Thank you.

Mr. SHAYS. I'll be coming around for another round.

I did have a question to you, Mr. McCallum.

Do you have an answer to that?

Mr. MCCALLUM. DHS has——

Mr. SHAYS. I'm going to ask you to talk a little louder. Your mic seems to be a little more of a problem.

Mr. MCCALLUM. DHS is represented on eight of the nine subgroups in TSWG. The only subgroup that it's not represented on is Tactical Operations Support, and that's a subgroup which is focused on direct support for tactical military operations overseas.

Mr. SHAYS. Thank you.

Mr. TIERNEY. Thank you, Mr. Chairman.

Dr. Bolka, let me ask you a question. The Department of Homeland Security, has it done a threat assessment that you're aware of, broad threat assessment?

Dr. BOLKA. There is no department-wide threat assessment that I know of, Mr. Tierney. If I'm incorrect, I'll correct that for the record.

Mr. TIERNEY. I suspect you're not. I don't know of one either, and I wanted to make that point.

So you have no threat assessment, in essence, in regard to homeland security issues; we have no list of priorities as to what our most immediate needs are.

Dr. BOLKA. In the large sense, I think you're probably correct.

Mr. TIERNEY. So I would think that one of the ways that logical people might have addressed the situation was to do a threat assessment to determine what our priorities are, and then, through a network of all the people involved in this, going right down to the local responders, we would determine what technology we may need to meet some of those needs we don't already have. Then you might ask for proposals of people to meet those needs and then start going through your cooperation and analysis with these others.

Does that not sound legitimate to you?

Dr. BOLKA. That sounds legitimate, and it has been done on a component basis by many of the components of Homeland Security.

Mr. TIERNEY. What are you referring to as a "component," please?

Dr. BOLKA. Border Patrol for Border and Transportation Security, for example, or critical infrastructure protection and so on.

Mr. TIERNEY. So the border security people will determine what they think they need and have made those needs known to you?

Dr. BOLKA. Currently, because we're so new, a lot of the internal relationships have not yet been formed. In the past, they have worked with the TSWG, and we are establishing those relationships right now.

Mr. TIERNEY. I guess I'm a little mystified—you know, it's 2 years in, September 11, and we've been asking on this committee, Republicans and Democrats alike, for a threat assessment since immediately after that disaster. It made sense to everybody on this committees that would be the first step that you would do, to determine what your threats are and set a priority. And then I think it only stands to logic that once that's done, then you would try to put your resources for meeting those needs in order.

If, instead, what you're telling me is that Border Security decides that they've got certain needs and some other component decides to throw it into the hopper to see what comes out, we're probably not handling this in a way that is going to best and timely serve our needs.

Is there any effort to put some more order and more structure in the way we go about this with regard to homeland security issues?

Dr. BOLKA. Yes, there is. In the 2004 Appropriations Act, the appropriations bill, the Congress has stipulated that the research and development submission for 2005 will be a single submission from the Department of Homeland Security. That will be the impetus to bring together the parties that are already working together somewhat to formalize the relationships and provide that information and that request to the Congress.

Mr. TIERNEY. And I assume what we'll do then is put out the bid or request for proposals, those items that are prior advertised as our immediate requests, and then move on down the line as our resources permit?

Dr. BOLKA. Yes, sir, that's what we're doing right now, based on a program that has been defined.

Mr. TIERNEY. With a component?

Dr. BOLKA. With a component. We're addressing those first.

Mr. TIERNEY. And I guess the dilemma of that is, we may find out by 2005, way down the food chain we should have been addressing a number of things with higher priority; and I guess that's what irritates me a little bit, because we've been talking about it for so long.

Let me ask you, communications—interoperability, communications systems. Two years after September 11, we've had Mr. Cooper here, Steven, testifying that nobody was quite sure who had responsibility for that kind of interoperability and communication; that the actual function was at Mr. Ridge's original position at the White House. But when Mr. Ridge was designated as the Secretary of the Department of Homeland Security, he moved, but that responsibility didn't; and there's been some confusion, until late, as to who owns that project.

Has your office, been dealing with any of the proposals that have been coming forward to determine what system would be used by all of our local first responders and their interaction with the Coast Guard and FEMA and other groups?

Dr. BOLKA. No. No, sir.

Mr. TIERNEY. And why isn't that in your department? Where is it, if anywhere at all?

Dr. BOLKA. I don't know the answer to your question, Mr. Tierney. I'll find out and give you an answer.

Mr. TIERNEY. Does it sound like—isn't that a component of homeland security?

Dr. BOLKA. I personally don't know, sir, but I——

Mr. TIERNEY. Who would know?

Dr. BOLKA. Well, I'll try to find out and point you in the right direction.

Mr. SHAYS. Would the gentleman yield?

Mr. TIERNEY. Oh, sure.

Mr. SHAYS. Plenty of time here?

My understanding is, Dr. Bolka, you joined the Department of Homeland Security 2 months ago or how long ago?

Dr. BOLKA. Reported September 2, sir.

Mr. SHAYS. September 2?

Dr. BOLKA. Yes, sir.

Mr. SHAYS. So we're going to cut you a little bit of slack in that regard.

Let me ask you this: Is that an indication that the office basically has not been up and running, and it's just starting to get up and running now?

Dr. BOLKA. I think with the summer BAA that was issued through the TSWG was the beginning of the Advanced Research Projects Agency office coming up and running. And as I mentioned, we put our second solicitation out today, and we do have enough professionals on board right now to handle probably 8 or 10 development programs.

Mr. SHAYS. Is there anyone else with you that is potentially able to answer some questions that you might not know an answer to, that might have been there a little bit longer?

Dr. BOLKA. No, sir. I didn't bring anyone else with me. If you can tell me what the questions are, have your staff give me the questions.

Mr. TIERNEY. I just wanted to ask you what are the projects that you have out so far? What was the first one?

Dr. BOLKA. The first one was through the TSWG, which was rapid prototyping of chemical and biological sensors that could be fielded very quickly.

Mr. TIERNEY. None of the other groups had ever asked for this before; this was something unique to homeland security?

Dr. BOLKA. It is not unique; however, it is a need that is there for the various components and first responders, and we are trying to fill some of the existing holes.

The second solicitation was for the next generation of sensors, which would be cheaper, more dense, faster and give better situational awareness.

Mr. TIERNEY. So essentially 2 years in, we have one issue, one priority that is being addressed?

Dr. BOLKA. Yes, sir.

Mr. TIERNEY. Twice?

Dr. BOLKA. Well, actually it is not being addressed twice, it is being addressed once for the near term, once for the longer term.

Mr. TIERNEY. OK. I am—certainly this is nothing personal with you. My frustration here is not personal at all, but with the reorganization, and when it was implemented, and how it was structured and what has been going on since. I sense some confusion and some lack of leadership here. But the first responders in my district are at a loss on a number of different needs that they have, and, frankly, contractors in my district are at a loss as to where do they go if they have a great idea? Do they first try and get to see whether or not local first responders or FEMA or the Coast Guard or somebody else identifies and also recognizes that need, then move up the chain? Do they come directly to you? But the first responders, and when things go from yellow to orange, there is all sorts of things that come into their mind as to what they need, and they don't have any idea where these are prioritized on the Federal Government's chain.

So I look forward to working with you. Again, I am not going to ask you a lot of questions on that, you are so new, and apparently you are going to give me some information, and that will be helpful, but people need to know these answers. And whatever way we can be helpful to you in structuring this thing, because I think it is important to move that assessment forward, as we say here for the 2,000th time, that assessment and a prioritization and put some meaning to all of this.

So thank you for your testimony.

Mr. SHAYS. Thank you.

I have a few more questions. One of the things that I am struggling a little bit with, and it is history that you are not really not aware of, but when we set up the Department of Homeland Security, we visualized, or at least I did and a number of others, that there were four pillars to this organization. And another pillar, other than science and technology, was information, analysis and infrastructure protection. That was the plug that would evaluate all intelligence information.

And we had a hearing, not in this committee, but on the Select Committee on Homeland Security that I was on, discussing TTIC, which is the Terrorist Threat Integration Center—that is not within the Department of Homeland Security—and we are wrestling with understanding what its role is as it relates to the Department of Homeland Security.

And, Mr. McCallum, I am still doing a little bit of wrestling with understanding how TSWG is not—is a valuable tool in which all of this information comes, but really trying to understand how the Department of Homeland Security is going to make sure it is not just one of so many players in this process.

Now, one of the things I understand is that in this 2004 budget, about 35 percent of your budget will come from the Department of Homeland Security. Is that somewhat what you are hearing?

And, Mr. Jakub, if you care to jump in as well.

Mr. MCCALLUM. As I understand it, we don't know yet from the Department of Homeland Security what amount they anticipate sending to us. We would anticipate our budget at this point, based upon what we have heard from them, to be more in the neighborhood of 20 percent, but that varies. We are still in the formulation

stage, since we have just seen the conference reports, but in this year's budget they were about 20 to 25 percent.

Mr. SHAYS. Now, as the Department of Homeland Security joins TSWG as a department, I realize that it used to have other elements within it that came from other departments that were part of TSWG, but now that we are under this new structure, as it joins as a department within TSWG, it is not clear to me whether TSWG process is best suited for what may become expansive homeland security technology solutions.

Since the Department of Homeland Security is only one of many votes on projects to be funded through TSWG, how does DHS ensure that its homeland security funds are not being used to fund other agency priorities?

And, Dr. Bolka, I would like all of you to respond to that.

Mr. MCCALLUM. Since I have my mic on, maybe I will respond first. First, I would like to make a correction. Based on our budget from last year, they are about 15 percent of our total from a dollar contribution in the 2003.

Mr. SHAYS. No.

Mr. MCCALLUM. In 2004, we don't know what it is going to be.

Mr. SHAYS. Our information says it may be up to a third, but it is obviously going to be more than 15.

Mr. MCCALLUM. One of the ways that we have attempted to ensure that the priority on protecting the homeland is recognized is by adding DHS to the executive committee. And in the organizational structure which you saw as displayed on my page 2, they are shown as a technical chair, which means that all of the work that we put forward from this—from the nine subgroups, eight of nine have senior DHS representation. Three of nine are chaired or co-chaired by members of DHS agencies, such as TSA and the Secret Service.

So they will get full membership at a voting level, they will get—they have a first pass cut at the first level of management, at the subgroup chairs. And then when we report our proposed program plans for the year, they also sit on our executive committee, so that if they feel that any areas are not being adequately addressed, or areas that they think are primary priorities and need to be addressed more strongly aren't being, they bring that up with our executive committee.

So there are multiple levels and checks and balances within our system to ensure that, you know, a primary partner in our enterprise is adequately addressed. And, as Mr. Jakub said a few minutes ago, this is largely a matrix government organization that really works. Most issues are settled on the good of the system. And I have not seen, in the 4 years I have been with this organization, a homeland security-type issue that also wasn't a military issue and also wasn't a State Department issue.

When there is a major technical priority that we can't cover, it is usually a gap in everyone's protection scheme. So I have not seen the issue of homeland security versus State versus DOD ever be an issue that got beyond the executive committee.

Mr. TIERNEY. I don't want to just be one note on this, but let me ask Mr. Jakub and Mr. McCallum, do either of you then have an assessment with respect to the Department of Defense or the De-

partment of State of what your particular needs are, and have you prioritized those?

Mr. JAKUB. Let me answer it this way: Both my office and Ed's office receive a variety of Intelligence Community assessments that deal with the terrorists threat, whether they be put out by TTIC or whether they be put out by CIA, by DIA, whatever they happen to be. There are a number of those that come out all of the time. We use those as guidance materials when we are looking at the beginning of the year, when we are starting to prioritize what it is that we want to do. If these assessments are saying that we need to be really more attentive to—or the information is indicating, for example, as I brought up in my testimony at the outset here, that terrorists groups, some of them now are leaning more toward chem/bio, radiological materials, and whatnot, that is a signal to us.

And that is something we have to do from a management perspective is pick up on the intelligence signals, and then make sure that they are communicated to our subgroups. We do that at the beginning of the year. So we will take a look at it, and we will give our subgroups direction: We need you to emphasize this year CBR countermeasures for example.

I also indicated for you that the other things that we are concerned about, and this is based on intel reporting, for example the nature of the terrorist threat that emanates from new explosive formulations, bombs, that type of a thing. Our direction to our subgroups, specifically our physical security subgroup that handles blast mitigation countermeasures and other things related to bomb squads and others, is to take a look at that threat in terms of developing requirements.

So they were told right up front that we were going to weight potential monetary contributions in the areas of CBR and countermeasures, physical security, explosive detection and improvised devices. That doesn't mean we aren't going to give money to the other subgroups, but we told them right from the get-go as we started developing the program, these are the areas we need to concentrate in. Then we take a look at what comes up through the requirements process.

Mr. TIERNEY. Can we envision a circumstance where, say, the Department of Homeland Security would prioritize some need of theirs above the things that you have given attention to, or that your group has decided are going to get some priority?

Mr. JAKUB. That would be something that we would like to take a look at in the executive committee, if DHS were to come in, and I think this will work itself out over time. They are so new. They are just now getting involved in the processes.

If they were to come to the executive committee at—again, at the beginning of the fiscal year when we start this process and say—and we would also look at the Intelligence Community on this, we would like to see what the Intel Community has to say about a given threat—but if they were to identify a specific area that needed to be addressed on a priority basis, we could factor that in very easily.

Mr. TIERNEY. But it is a situation where your group would have to meet and make a decision jointly, collectively I should say, and it could end up being in contradiction to what the Secretary of the

Department believes ought to be given attention, and then we have a situation on our hands. And my understanding of putting this whole Department of Homeland Security together was that the Secretary was going to have ample authority to sort of take some control of a situation that really needed it.

Now, I know we didn't do that with the Office of Management and Budget, and I think that is a terrible mistake, that if the Secretary decides resources have to be applied somewhere, and OMB overrules them, we are out of luck. And we saw that with Department of Energy, where the Secretary made a request of some magnitude, and the Department just tossed it out the window, and we ended up with a very small amount.

So I hope there is going to be some way, Dr. Bolka and the other two gentlemen, of addressing that, other than leaving it as a committee decision where we are dealing with homeland security, and the Secretary is able to set some real direction there and make probably the ultimate answer as where we have to go with respect to homeland security, even if that means working outside your group.

Dr. BOLKA. That is correct, Mr. Tierney. And, in fact, the establishing legislation that established HSARPA provides me with the transaction—other transaction authority and contracting and legal authority to contract for ourselves if we have a requirement that can't be met or can't be folded into a joint development, or we need to modify what the product of a joint development is somewhat. We have the capability of doing that ourselves.

Mr. TIERNEY. Does that mean that if you don't think they are moving fast enough, or putting it in a high enough priority, you can go outside and do it?

Dr. BOLKA. That is correct.

Mr. TIERNEY. Thank you.

Mr. SHAYS. TTIC was established in 1986, as you point out, to deal with counterterrorist—I am sorry. TSWG was established in 1986 to deal with counterterrorism measures, innovations; is that correct, Mr. Jakub?

Mr. JAKUB. Yes, sir. Read counterterrorism in the largest context. We look at it as counterterrorism, antiterrorism, support for the intelligence and security elements and also working consequence management. So it is a very broad term.

Mr. SHAYS. Was that the same time that Mr. Bremer was—or not necessarily Ambassador Bremer, but when we established an ambassador on terrorism?

Mr. JAKUB. Yes, sir. It was right about the same time.

Mr. SHAYS. What I am still wrestling with is, Mr. McCallum, there are so many ways that we define technology in the Department of Defense, and this is just one of the doors that you can go in.

I am just trying to appreciate why DOD won't drown out DHS in its need for the protection of our homeland with innovations. That is kind of what I am wrestling with right now. What is the protection that will make that not happen?

I will just tell you, I am getting to develop a bias. For instance, I think rebuilding of Iraq, and I support it strongly, going into Iraq, is being run by DOD when I think it should be run by State. But

it is basically, it is—Ambassador Bremer is answerable to the Secretary. You are answerable to the Secretary.

Make me feel more comfortable that somehow this new agency, with someone who has only been there 2 months or has been there 1 month, is—his people are going to have their voice heard.

Mr. MCCALLUM. Mr. Chairman, the history of the TSWG shows that the Secret Service, the TSA, and a number of other—Coast Guard have for years been primary participants in the TSWG process and have numerous prototypes that we delivered, and not just that we delivered, those elements of what is now DHS help us develop those.

If you remember in my opening statement, the users that identified requirements to us help us work through the process and deliver them, DOD and State have both chartered our organization to be an interagency forum. No single organization contributes all of their R&D dollars to us for fast prototyping, and neither DOD nor DHS nor State Department—the piece that they come to us with is for those parts which are interagency in nature and which will have broad application. There are always, within each organization, core responsibilities that they want to do in house.

Within DHS even the most generous proposals to send money to this interagency body are but a small portion of their R&D budget. We would not anticipate attempting to do all of that. But in the fast prototyping world, no one is faster or more agile than we are.

Mr. SHAYS. Just before we go to the next panel, would you take one of the examples that you have in your extensive testimony, other than one that you made reference to, tell me how it began, and how we capture our investment. In other words, we are using Federal dollars to help respond to requests for funds? But some of these are going to become very viable, and, frankly, the manufacturers should do quite well in producing these for the government. How do we capture back something?

Mr. MCCALLUM. I am not sure what you mean by capture back, Mr. Chairman.

Mr. SHAYS. Our own investment, the money we pay.

Mr. MCCALLUM. Well, if you would like me to pick one of these, let me pick one that I don't believe any of the——

Mr. SHAYS. And make reference to the page, please.

Mr. MCCALLUM. Page 12. And I also pick it because I don't believe that anybody here is going to demonstrate this, but it is the next-generation low-cost robot. A few years ago a—both the Department of Defense and the National Institutes of Justice were looking for a lower-cost robot for EOD teams across the community, and we started out in a requirements-setting session to begin to build a new low-cost robot, something that, as the law enforcement agencies in this country tell us, needs to cost less than a squad car. Most robots are made to be very high-capability items of equipment and are fairly substantial in cost.

But as we began looking at this within the IJ and the entire community, we discovered, though, what was available commercially in Canada, called the Vanguard Robot, for $35,000 apiece, which completed about 80 percent of the requirements. And we went back to the committee and said these guys are ready to begin action right now.

So the process wasn't one of long-term R&D, but the process of bringing back to the government was that we had a community of technicians and technical folks that knew what we needed to get. We had a community of users that identified what requirements they had to live by, what they needed, and were able to make some cost decisions to go and get something that was good enough while we completed the development.

Mr. SHAYS. That is buying off the shelf, in a sense, right?

Mr. MCCALLUM. For the most part. We are developing the rest of it.

Mr. SHAYS. So the only cost was your having to discover this and to make some decisions to purchase it.

Mr. MCCALLUM. Some slight upgrades.

Mr. SHAYS. Some slight upgrades. But take something where—and a firm came in, investors came in, and they said, we have this idea. We think it will benefit you tremendously. We need a sum of money to continue our research and prove to you that it works. Then you put in millions of dollars, or hundreds of thousands or whatever. They then sell it to you. How do you determine price? How do you know that—there—because you are the only purchaser. How do you work out all of those things?

Mr. MCCALLUM. We are most frequently, sir, not the only purchaser. Most of the products that we put out we attempt to put out on the commercial market. For most of the people that you will hear talk in the second panel, we identify a requirement. And in the second phase of those requirements, in the white paper, we begin to identify a commercialization or technology transfer process, which is one of the focuses for selection.

If we can't identify how it is going to be transferred, who is going to build it, who is going to manufacture it, who is going to maintain it, and what its cost is going to be, that is an indication for us not to move forward. Most of our items are items that are either going to commercial status——

Mr. SHAYS. That is even better in a sense. I am just trying to understand how, when you put 300,000—and I am not suggesting anything bad, I just want to understand it. I vote for our government trying to fund those innovations that will make sense. I just want to understand how the financial transactions work.

It costs us $300,000 for the low-cost robot. Give me something that costs more and then walk me through it. Do we get our money back ever, or is it just money that is spent? I mean, if we help someone develop an item that can be sold at significant profit and so on, does the company have any obligation to pay for those initial investments?

Mr. MCCALLUM. We typically do not try to recover royalties for the government. Our primary objective is to get the equipment out in the hands of the users in the fastest and most cost-effective way that we can. Typically the government retains rights to equipment, but we do not go for royalties. Typically government purchases rights so that if a company is bought out and ceases to produce an item, or there is some other cost piece for that, that the government retains the right to go forward and manufacture it elsewhere. But our primary objective is to produce the equipment, not to move for the royalties.

Mr. TIERNEY. On that same thought, then, do we do anything at all about keeping that technology open for others in the industry to use? In other words, we have funded in some cases a substantial amount of money for technology to be developed. We are not going to recoup our investment. Then do we at least allow this technology, maybe with some parameters, though, to protect the investment of the individual, but allow others in the industry to then build on that or use it so there is some competition or that others might take advantage of it, and at least do that with respect to the public since these are public funds that got these things started?

Mr. MCCALLUM. That is, of course, dependent. You get into an area where I would have to start getting my IPR attorneys involved. But in some cases we advertise for licensing so that companies can bid with the initial developer on manufacturing, but that is on a case-by-case basis. We encourage companies to team to get those kinds of things done.

And we don't typically find that these kinds of things are closed. But many of the companies, you can probably address that better with the next panel, have IPR rights and have proprietary data involved with these developments.

Mr. TIERNEY. Thank you.

Mr. SHAYS. Just before we go to the next panel, I am still wrestling with the simple concept here. Do you, Dr. Bolka, feel that you have a mandate to do some of what TSWG does internally? In other words, do you believe that you need to set up an operation where people can go directly to you for funding, or is all of the funding that is going to be out of the Department of Homeland Security going to go through this funnel of TSWG?

Dr. BOLKA. As I said in my testimony, Mr. Chairman, this fiscal year, this coming fiscal year, the Congress has stipulated that $75 million we spend on rapid prototyping. My total budget this year in HSARPA will probably be around $350 million.

Your question was do I have a mandate to do rapid prototyping other than through TSWG? I believe I have the capability to do it. Depending on the interagency and interdepartmental nature of the requirements, it may be that working through TSWG is the best way to do it.

If it is something that is unique to one of the DHS components, then I can do it myself, because I have contracting officers and legal personnel, and we can let contracts. So for the rest of my budget, I am establishing a contracting capability, the appropriate legal support is made available, and, as I said, the other administrative support is available to me as well.

Mr. SHAYS. Mr. Jakub, just walk me through this as I try to sort this out. Should DHS have the capability to basically duplicate what TSWG does and do it internally and not have to go through TSWG?

Mr. JAKUB. Let me answer it this way. There are a lot of departments and agencies that are in the TSWG. Many of them have their own budgets for research and development. The FBI, the Agency, the Department of Agriculture, whatever.

What we offer in TSWG are another avenue. There may be a requirement they have that they don't really know how to work. They can come to TSWG with that. They may have a requirement that

is going to be useful for more than just one agency, and they can't afford to develop it themselves. They can bring it to TSWG. If that fits with the requirements we have, we may be able to partner with them and leverage moneys. We don't duplicate what individual agencies do, so we aren't taking anybody else's money to do this. What we have is a program.

Mr. SHAYS. Say that again. That doesn't make sense to me. I don't know what you mean, you don't duplicate. Go on.

Mr. JAKUB. Agencies that have their own R&D budgets can fund R&D within their own agencies.

Mr. SHAYS. Right. So you are not going to do the same project in both places? Is that what you mean?

Mr. JAKUB. That is one of the things we would make sure didn't happen.

Mr. SHAYS. Right. It is almost like if you don't get it through TSWG, you can go directly to the Department. And maybe that is good or bad, I don't know, but it is—I am just really trying to understand how this new agency, the Department of Homeland Security, kind of fits in. And I realize, Mr. McCallum, that this—it used to be an old agency in the fact that you had members and do have members who were there well before we had a Department of Homeland Security, we just collected under the Department of Homeland Security.

But I can make an argument that you should put TSWG under the Department of Homeland Security. I could just make an argument that could or should happen. Just tell me what would be the pros and cons of it.

Mr. MCCALLUM. The primary con, sir, is that the military warfighting effort in the offensive side of that, the intelligence support that we do, and the support for the Department of State would be lost.

The defensive component is a subset. The kinds of things that DHS is doing to protect the Nation are of primary importance, but it is a subset of the total combating terrorism technology development effort. We can do both, because the technologies that are developed are appropriate for both.

Mr. SHAYS. Theoretically if a company came to be funded, and TSWG said no, could they theoretically go to—and, Mr. Jakub, I would like you to respond as well—could they theoretically go to the Department of Homeland Security or the Agriculture Department, depending on what area it was, and submit that application hoping the Department will do it directly?

Mr. JAKUB. It is possible.

Dr. BOLKA. Yes, sir. In fact, in DHS we have established an e-mail address that we use to solicit—well, that we use to collect unsolicited proposals. It is science.technology@dhs.gov.

Each one of those unsolicited proposals is examined, it is compared against requirements, it is circulated through the Department to see if there is any interest, and a response is sent back to the individual. We treat those proposals very, very seriously. Some of them are frivolous. Many of them are not.

So we do have the opportunity, within the components of the Department and within science and technology, to collect and process

unsolicited proposals and also to solicit proposals for requirements that are either unique to a component or unique to DHS.

Mr. SHAYS. When we debated, and when I was sold on having the Department of Homeland Security, one of the arguments, and one of the pillars, was your pillar, your directorate, that basically we said this is one place to assess technology for counterterrorism to protect our homeland, and what I am getting a feeling is that TSWG is one place, and probably the primary place, but then we can still go to all of the different departments and agencies to get funding as well. That is kind of what I am left feeling. Is that the way I should feel? Dr. Bolka.

Dr. BOLKA. Not as far as DHS goes, sir, because the intent of the Congress and the intent of the Department is to grow the Department of Science and—or the Directorate of Science and Technology to perform exactly that function.

Mr. SHAYS. That is what I thought. That is how I started this hearing.

How do you react to that, Mr. McCallum?

Mr. MCCALLUM. I would react by looking within the working groups as I have seen them operate. Industry or academia, both United States and foreign, do bid on requirements that go out. They bid not only to different agencies, but within agencies for people who are looking for the kinds of products that they are selling. But as I have sat through some of these subgroup meetings and observed, frequently a proposal will come in that the Coast Guard or the Navy or the New York Police Department will say, we looked at that. Here is what we thought about it: We didn't fund it.

We also have people step up and say, hey, we are already funding that proposal. We have already committed funds to it. Don't move down that lane.

We not only choose things to fund, we choose things not to fund. An example from a few years ago was one where the Department of Energy that had been doing research in both physical security largely at Sandia National Laboratory and explosive detection at some of the other weapons labs brokered through TSWG, made a deal with the FAA, that the FAA, because of their funding, was going to fund primarily the explosives detection, and DOE was going to fund physical security so that we wouldn't have a duplication, and we would have a more cohesive Federal effort at both physical security and explosives detection.

Mr. SHAYS. Before Mr. Tierney asks questions, if I had an innovative idea from the private sector, would I go to TSWG first if it impacts the Department of Homeland Security, or would I go to the Department of Homeland Security? Would I go first to the Department of Homeland Security, get it; if I don't get it, go to you to have you reconsider; or would I do it in reverse?

Mr. MCCALLUM. We respond to specific requirements. When our sessions sit down and look, we define specific requirements that we are looking for. The DHS broad agency announcement that we just published for them had 51 defined requirements, and they would respond to those requirements. It is just not a—a come one, come all. We advertise for specific user-defined requirements for technology.

Mr. SHAYS. But what about the person that has thought of the idea that you haven't thought of asking, but it is brilliant? I mean, let me make the point. I had a homemaker who was a scientist, but now at home, and she came up with an extraordinary idea in terms of collecting data while she was doing stuff at home, and nobody asked her for this idea. The creativity of the American citizen was at work. Where would she go? Would she go to you first, or would she go to the Department of Homeland Security? That is really the question I am asking.

Mr. MCCALLUM. I suspect she can go wherever she wants. We do take unsolicited proposals. We pull boards together and examine them. Frequently in the last year or year and a half, we have taken those kinds of proposals from the Office of Homeland Security, when Governor Ridge was operating out of the White House, and more recently from the Department of Homeland Security, and staffed those around the Federal Government when they didn't meet one of our technology requirements where we knew that other agencies were looking for those kinds of issues, or if they weren't, that they might be interested in them because they looked attractive to us. So we staff those out and send those to people who we call sponsors and who might have the money or the interest to fund those kinds of things.

Dr. BOLKA. Our unsolicited proposals go through much the same process. We look at the idea. We look at our needs in DHS. We have representatives on the working groups in TSWG, and we also have the executive committee membership in TSWG.

So an unsolicited proposal that comes to us can go through exactly the same process that it would have gone had it gone to Mr. McCallum's organization.

Mr. SHAYS. Thank you.

Mr. Tierney.

Mr. TIERNEY. Thank you.

Dr. Bolka, let me ask you this: You have two ongoing projects that you have in TSWG right now, and I assume that all of your components may well be using parts of your research and development budget, or your research and development budget may be being used to support some concepts some of your components want researched.

Do you have an inventory of what is being done outside of TSWG right now within any of the agencies or components under your body?

Dr. BOLKA. In the area of chemical/biological, radiological, nuclear and explosives, we do have a pretty good list of what is going on in the user agencies, yes, sir.

Mr. TIERNEY. Might you make that available to the committee for our review?

Dr. BOLKA. Yes, sir.

[The information referred to follows:]

COMMITTEE INSERT
COUNTER TERRORISM TECHNOLOGY: PICKING WINNERS AND LOSERS
Monday, September 29, 2003

HOUSE OF REPRESENTATIVES
COMMITTEE ON GOVERNMENT REFORM

SUBCOMMITTEE ON NATIONAL SECURITY, EMERGING THREATS,AND INTERNATIONAL RELATIONS

This insert refers to HGO272.060, Page 70, Line 1619. Testimony of Dr. David F. Bolka, Director, Homeland Security Advanced Research Projects Agency (HSARPA).
Beginning at line 1610:
[Mr. Tierney.] Do you have an inventory of what is being done outside of TSWG right now within any of the agencies or components under your body?
[Dr. Bolka.] In the area of chemical/biological, radiological, nuclear and explosives, we do have a pretty good list of what is going on in user agencies, yes, sir.
[Mr. Tierney] Might you make that available to the committee for our review?
[Dr. Bolka] Yes, sir.

Insert - A
On September 23, 2003, HSARPA issued its first Research Announcement (RA-03-01): Detection Systems for Biological and Chemical Countermeasures Program. Its purpose is to develop, field-test, and transition to commercial production the next generation of biological and chemical detectors and systems. It addresses two areas in biological countermeasures and three areas in chemical countermeasures. In response, 518 white papers were received. Authors of selected white papers will be asked to submit full proposals which will be due 19 December, 2003. Following evaluation of all proposals received, HSARPA expects to enter negotiations with selected proposers by the end of January, 2004. The total amount of funds committed to this effort depends entirely on the number and cost of the proposals selected for execution.

On November 13, 2003, HSARPA issued a Small Business Innovation Research (SBIR) Program Solicitation. The purpose of this solicitation is to invite small businesses to submit innovative research proposals that address eight high priority DHS requirements:

- New system/ technologies to detect low vapor pressure chemicals (e.g., Toxic Industrial Chemicals);
- Chem-bio sensors employing novel receptor scaffolds;
- Advanced low cost aerosol collectors for surveillance sensors and personal monitoring;
- Computer modeling tool for vulnerability assessment of US infrastructure;
- Ship compartment inspection device; and,
- Three other topics unrelated to chemical/biological or radiological/nuclear and explosives detection

The deadline for receipt of proposals is December 15, 2003. The total amount of funds committed to this effort depends entirely on the number and cost of the proposals selected for execution

November 13, 2003: Homeland Security Advanced Research Projects Agency (HSARPA) releases a Request For Information (RFI) on Radiological and Nuclear Countermeasures System Architectures Analysis (RNCSAA) Draft Statement of Work for comment (DSWC 04-01). The RFI lists four tasks:

- Developing a framework for evaluating system architectures;
- Study systems effectiveness and vulnerability studies;

- Define and evaluate novel architectures, and approaches for countermeasures; and
- Identify additional studies to support these tasks.

This RFI will lead directly to a future solicitation based on the responses to this RFI and related topics.

End of insert -

Mr. TIERNEY. Are there areas where there may be things going on where you don't believe that you have a handle on it yet?

Dr. BOLKA. I am sure that there are things going on that I don't know about yet.

Mr. TIERNEY. In terms of research and development?

Dr. BOLKA. Yes, sir.

Mr. TIERNEY. Really. That is interesting. As you find out those things that might be interesting for us to know, too, and when you think that you have a grip on it and got a little bit of control in determining what that is, we would like to know when that point arrives, or at least you might give us an estimate now of when you think that point will be, and then let us know when it arrives.

My concern is that we didn't give the Secretary the kind of authority that I think would really make this kind of thing work. I mentioned that earlier in terms of the budget. And I want to make sure that homeland security, some central individual or aspect here is determining what our needs are, setting a priority, and then making darn sure that they are being addressed.

And I don't have a problem with them being addressed through TSWG, if that is the best way to go, and everybody sharing sort of a sweeping idea of knocking out the stuff that has already been filed somewhere else so it is not duplicated or whatever. But I do want to make sure that we are working in a sense that when we think something is important for homeland security, it gets done and doesn't have to get in line and queue up with other concepts on that.

So if you would do that, I would appreciate that.

Dr. BOLKA. Yes, sir. I don't have a timetable for you right now, but I will work with committee staff to establish one and to submit the report.

Mr. TIERNEY. Thank you. Thank all of you gentlemen.

Mr. SHAYS. Let me just invite each of you to make any comment that you think we should have responded to, any question you think we should have asked, or to make any comment before we go to the next panel. But, before you do, let me just acknowledge, I know, Dr. Bolka, you are new here, but you have a distinguished career, so you bring tremendous expertise. I didn't mean to imply that being new didn't mean that you don't bring something significant to the table. I want to be fair to you in the sense this is a new effort, and you are trying to get things under control.

And, Mr. Jakub and Mr. McCallum, I know that you have—you work significant hours in this effort, and you have had tremendous successes.

We are just trying to sort out what we have done in the last few years and understand how it works. So we thank all three of you for your service to our country, very sincerely. And do you have any final comments that you wish to make?

Mr. JAKUB. Yes. If I could add one. We didn't talk about really the foreign aspect, the international aspect of the TSWG program. We have been able, through those contacts with our current three partners, to develop a lot of technology which is not only useful to us for our counterterrorism efforts, whether they be domestic or whether they be what we are using overseas, and those countries

as well. It permits us to leverage a lot of these resources we talked about and also to access their technology bases.

So when you ask about the value of the program, in looking at it we tend to look at it as not homeland security on the one hand and rest of the world on the other. Technology is technology. We can use it here, we can use it abroad, we can use it with our friends. And the value we get out of leveraging all of these resources has been invaluable for the U.S. Government as well as for our foreign partners in this war on terrorism.

Mr. SHAYS. This committee, in response to that, had an extraordinary opportunity to see some of the technology that the Israelis had in terms of—without going into much detail—of how they would—those who had been captured, how they would find a way to save captured folks in Israel, and how they would confront the terrorists who held them. And the technology that they had was so simple, and yet so brilliant. I am delighted that you responded to this area because it is very important that there be that dialog. And it raises the point, Dr. Bolka, that the Department of Homeland Security, while it is domestic, we will learn tremendously from our international——

Mr. JAKUB. Yes. And, in point of fact, sir, we are opening those doors for the Department of Homeland Security with our existing three partners using our existing program, and we are looking at possibly expanding with a couple of other foreign partners. We will also make that same offer to DHS. It is an example of how, I think, our program has helped DHS get up and running and will help them in the future.

Mr. SHAYS. Well, my staff is happy about this stuff, because they wanted me to ask you about the international side. So thank you.

Do you have any other comment, Mr. McCallum?

Mr. MCCALLUM. I would probably just like to close by pointing out that what we like, both State and Defense like to see this as a collaborative process. It is not one in which we are insisting that agencies come to the table or that they send money. It is a forum by which the larger agencies, I think, have found that they can collaborate and ensure that they know what is happening in other agencies, and indeed sometimes within their own agencies because of the breadth and scope of this program.

Mr. SHAYS. Thank you.

Dr. Bolka.

Dr. BOLKA. Well, as you said, Mr. Chairman, I am relatively new in the organization, but I would like to thank the committee and the Congress for the support and the confidence that was expressed in our fiscal year 2004 S&T budget. We will do our best to execute it wisely.

Mr. SHAYS. I am sure you will. Thank you gentlemen.

Our final, and our second panel, is Dr. Gordhan Patel, president, JP Laboratories, Middlesex, NJ; Mr. Jack Sawicki, director of business development, GEOMET Technologies, Germantown, MD; Mr. Lee F. Sword, program manager, Military Systems Division, IRobot Corp., Burlington, MA. Our fourth panelist is Mr. Richard Mastronardi, vice president of product management, American Science and Engineering, Inc., Billerica, MA. And our next panelist is Mr. Bruce deGrazia, chairman, Homeland Security Industries

Association, Washington, DC. We have Mr. Kenneth P. Ducey, president, Markland Technologies, Inc., Ridgefield, CT, and for the record, he is first among equals among this panel; and finally, Mr. Laurence D. Bory, vice president, Federal Government Relations, HDR, Inc.

And so what we will do is we will ask you all to stand. If you would stand, and I will swear you in. Thank you.

[Witnesses sworn.]

Mr. SHAYS. Note for the record that our witnesses have responded in the affirmative.

Thank you for your patience as we had the first panel. But Dr. Patel is the first, and Mr. Sawicki, and Mr. Sword is third, Mr. Mastronardi is fourth in this. OK.

Now, let me just say to you, you have prepared comments. Given that we have seven of you, it would be helpful if you would stay closer to the 5 minutes. But don't read fast. I would prefer you to leave something out; if you choose to, you may. Frankly, you don't need to read. You would probably do a better job just describing some points you want us to know. It would be helpful if you responded to some of the issues that came up from the first panel, and so it may be that you would like to submit your testimony for the record and just speak extemporaneously.

So we are going to start as you are lined up. That is how we are going to do it. So, Dr. Patel, thank you very much for being here.

STATEMENTS OF GORDHAN PATEL, PRESIDENT, JP LABORATORIES, MIDDLESEX, NJ; JACK SAWICKI, DIRECTOR OF BUSINESS DEVELOPMENT, GEOMET TECHNOLOGIES, LLC, GERMANTOWN, MD; LEE F. SWORD, PROGRAM MANAGER, MILITARY SYSTEMS DIVISION, IROBOT CORP., BURLINGTON, MA; RICHARD MASTRONARDI, VICE PRESIDENT OF PRODUCT MANAGEMENT, AMERICAN SCIENCE AND ENGINEERING, INC., BILLERICA, MA; BRUCE DEGRAZIA, CHAIRMAN, HOMELAND SECURITY INDUSTRIES ASSOCIATION, WASHINGTON, DC; KENNETH P. DUCEY, PRESIDENT, MARKLAND TECHNOLOGIES, INC., RIDGEFIELD, CT; AND LAURENCE D. BORY, VICE PRESIDENT, FEDERAL GOVERNMENT RELATIONS, HDR, INC., ORLANDO, FL

Dr. PATEL. Mr. Chairman, members of the committee, thank you for inviting me to testify about counterterrorism technology, especially the product we have developed. JP Laboratories developed a credit-card-sized low-cost radiation dosimeter, as I have in my hand, and I have provided samples to you, both irradiated and unirradiated samples. The dosimeter can be used to monitor levels of radiation exposure in an event of radiological attack by terrorists.

It is widely believed that terrorists have a new weapon called a dirty bomb. A dirty bomb is an ordinary explosive packed with a radioactive material. When detonated, it will spread radioactive dust.

High doses of radiation such as x-ray emitted by the radioactive dust can cause cancer and even death. A dirty bomb could cause widespread panic, massive disruption, and rendering the surrounding area uninhabitable for years.

In the event of a detonation of a dirty bomb, it is imperative that people affected by the dirty bomb and the first responders need to quickly assess the radiation exposure. The people affected by a dirty bomb will know their radiation exposure and will not panic, and the concern will be minimized. If they have a wearable inexpensive radiation dosimeter, they will know their radiation exposure.

If they are not exposed to radiation or receive a very low dose, they will not need to worry and would not need to rush to the hospital. However, those who have received a high dose may go to a hospital, and physicians would know whom to treat first.

In order to determine radiation exposure, hospitals will need to obtain blood samples from every potential victim. That will be practically impossible to do with so many people affected by a dirty bomb. Panic among the people and the concern can be minimized if they have a wearable, easy-to-read personal radiation dosimeter.

JP Labs has developed a credit-card-sized radiation dosimeter, we call it SIRAD for Self-Indicating Instant Radiation Alert Dosimeter, which can be used to monitor high-energy radiation released in an event of a dirty bomb attack. When exposed to radiation from a dirty bomb or nuclear detonation, the sensing strip, which is in the center of this bagge, when exposed to radiation from the dirty bomb, or nuclear detonation—the sensing strip of SIRAD develops blue color instantly, and the color intensifies with the dose, providing the wearer and medical personnel instantaneous information of the victim's exposure to radiation.

The dosage is estimated by matching the color of the sensing strips with the color reference chart and the number printed on the side of the sensing strip. It can take days to get such information by other methods currently available.

SIRAD is inexpensive, will cost less than about $10. JP Labs has developed several products with Federal funding. The development of SIRAD was funded by the Department of Defense from 1997 to 1999, and by Technical Support Working Group [TSWG]. TSWG recognized SIRAD's significance to the first responder and has proceeded to make them aware of the dosimeter's availability.

TSWG has selected our second proposal for funding to go to what we call a smarter dosimeter, in which we are eliminating the color reference chart, and the number will be read automatically, and if there is any false positive, it will be indicated.

A week ago I had an opportunity to meet with many first responders at the Technology for Public Safety in Critical Incident Response Conference organized by the National Institution of Justice in St. Louis, MO. TSWG has helped many organizations put a number of products and processes into the hands of the first responders to fight terrorism. We believe that TSWG can do an even better job if it becomes an independent agency or with a larger budget.

I will be happy to answer your questions.

Mr. SHAYS. Thank you very much, Doctor.

[The prepared statement of Dr. Patel follows:]

Testimony of

Dr. Gordhan N. Patel

President, JP Laboratories, Inc.

Before the House Committee on Government Reform,

Subcommittee on National Security, Emerging Threats and International Relations

on

"Counterterrorism Technology: Picking Winners and Losers"

September 29, 2003

at

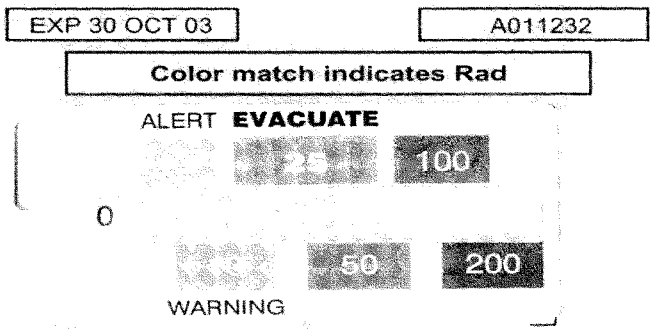
Room 215, Rayburn Health Building, at 2:00 PM

EXECUTIVE SUMMARY

After the events of September 11th, governments around the world have become acutely aware of potential terrorist attacks. Terrorists have a variety of weapons available to them - conventional explosives, chemical or biological agents, and a new weapon called a "dirty bomb". A dirty bomb is an ordinary explosive packed with radioactive material. When detonated, such a device could cause widespread panic and massive disruption while rendering the surrounding area uninhabitable for years.

In the event of such a detonation, it is imperative that first responders (police, firefighters, medical personnel, etc.) quickly assess X-ray radiation exposure among the affected to ensure that treatment is provided first to those who need it the most. JP Laboratories has developed a credit card sized radiation dosimeter called SIRAD (Self-indicating Instant Radiation Alert Dosimeter) which can be used to monitor the high energy radiation released in case of a dirty bomb attack. SIRAD will also be beneficial to those who work with radiation on a daily basis (researchers, hospital workers, etc.) as well as those who live near nuclear power plants and need to measure their radiation exposure.

When exposed to radiation from a "dirty bomb" or nuclear detonation, the sensing strip of SIRAD develops a blue color instantly and the color intensifies as the dose increases (see the Figure below) providing the wearer and medical personnel instantaneous information on the victim's cumulative radiation exposure. It can take days to get that information by other methods currently available. In addition, SIRAD is inexpensive - under $10 each.



JP Laboratories has developed several products with federal funding. The development of SIRAD was funded by (1) the Department of Defense, Naval Sea System Command and (2) Technical Support Working Group (TSWG). TSWG recognized SIRAD's significance to first responders and has proceeded to make them aware of the dosimeter's availability.

1. WEAPONS OF TERROR

Terrorists can attack us with a variety of weapons such as:

*. Explosives/guns, such as TNT, RDX, bullets and rockets.
*. Biological agents, such as anthrax, ebola, plague and smallpox.
*. Chemical agents, such as cyanide, phosgene, nerve agents and vesicants.
*. Radioactive materials, such as cobalt-60 and cesium-137.

Effects of these weapons are compared in Table 1:

Table 1: Comparison of availability and potential damage from different attacks

Attack	Availability	People (killed)	Property (Damage)	Duration
Explosive	Easy	Yes	Yes	Short
Chemical	Difficult	Yes	No	Short
Biological	Difficult	Yes	No	Short
Dirty bomb	Very difficult	Few	Huge	Long
Nuclear	Almost impossible	Maximum	Maximum	Long

2. DEFINITION OF A DIRTY BOMB

A dirty bomb is not a nuclear bomb. It is a radiological dispersion device (RDD), a weapon which disperses radioactivity. It is an easy to build, conventional explosive packed with radioactive material. Figure 1 shows a simple crude form of a dirty bomb. When such a bomb is exploded, it will disperse radioactive material. A high dose of high energy radiation, such as X-ray emitted by radioactive dust, can cause can cancer.

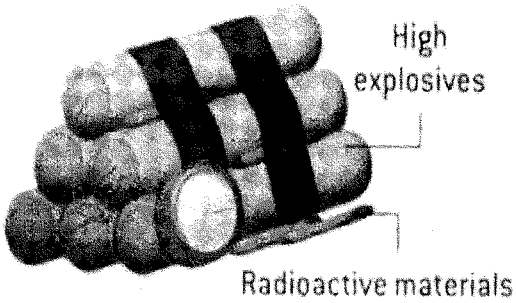


Figure 1. A simple crude form of a dirty bomb (Scientific American, November 2002)

3. EFFECT OF DIRTY BOMB

A simulated effect of detonation of a dirty bomb (3,500 curie of cesium-137 with ~50 lbs of explosive) at the lower tip of Manhattan Island is shown in Figure 2.

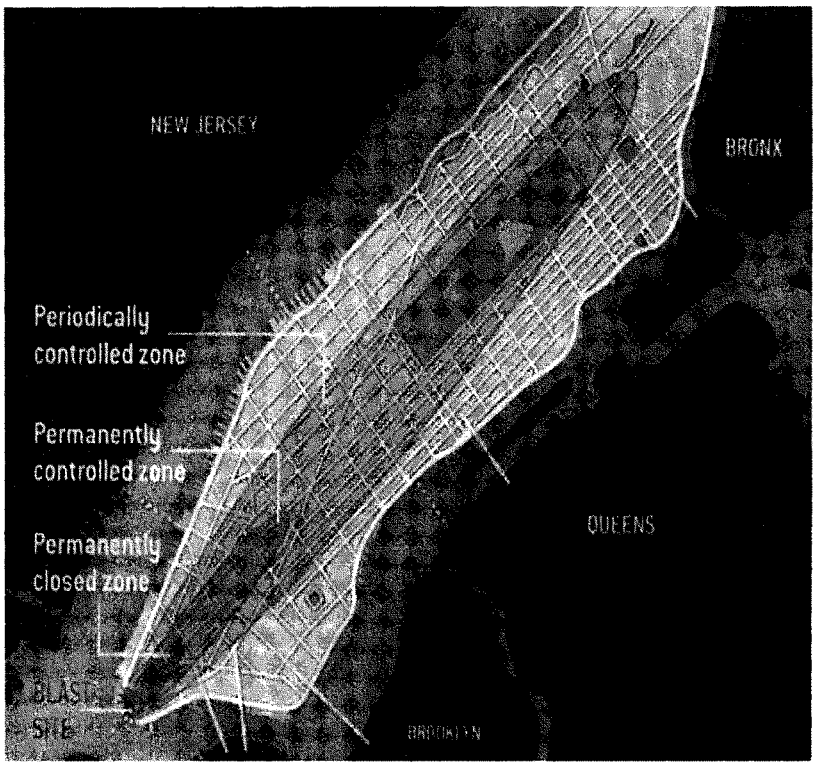


Figure 2. A simulated effect of detonation of dirty bomb (3,500 curie of cesium-137 with ~50 lbs of explosive) at the lower tip of Manhattan Island (Scientific American, November 2002)

If such a dirty bomb is exploded at the tip of Manhattan, there will be massive panic and disruption. Contamination will depend upon on the size of the explosive, amount and type of radioactive material and weather conditions. Radioactive dust will settle on people, buildings, and roads. Winds and air circulation systems in buildings will spread the radioactive dust even more. Rain will wash the radioactivity into soil, sewer systems and rivers.

EPA regulations require that contaminated areas should be cleaned if the risk is one death in 10,000 people. Because decontaminating certain areas might not be financially or technically possible, we might have to demolish or abandon several square miles of a city. We know from first hand experience that terrorists can destroy our buildings. With a dirty bomb, they could they force us to do it to ourselves on a much grander scale.

A dirty bomb could result in potentially trillions of dollars of losses if it is detonated in New York City, according to testimony before the Senate Foreign Relations Committee in March 2002 by Federation of American Scientists President Henry Kelly. Millions of people will leave the affected area in a state of panic, leading to potentially deadly accidents. It would be a logistical nightmare to relocate so many people in such a short time.

Everyone in and nearby the affected area will need to determine their exposure to radiation. With no other knowledge or preparation, people will rush to hospitals in droves. In order to determine radiation exposure, hospitals will need to obtain blood samples from every potential victim. That will be practically impossible to do with so many people affected. First responders will also be exposed to radiation. It is imperative they know how much radiation they have been exposed to so they can leave the affected area before they received a higher dangerous dose. In an unintended incident of a similar nature, almost 10% of the population of Goiania, Brazil demanded testing for radiation exposure in 1987 (see section **5.1 Goiania, Brazil**).

4. IS DIRTY BOMB AND ITS THREAT REAL?

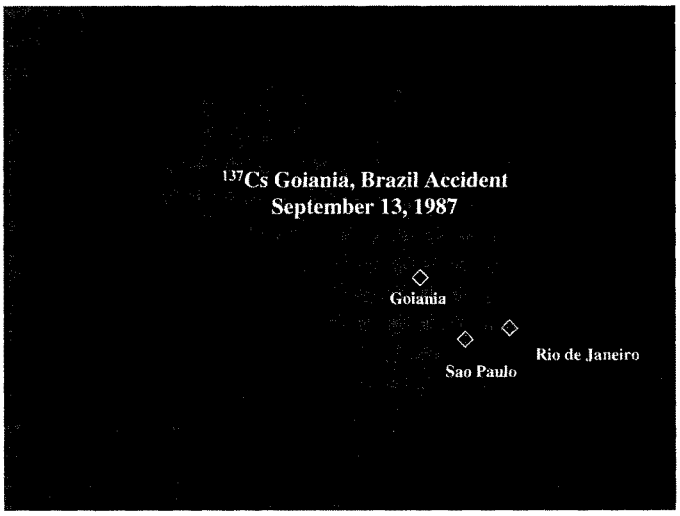
There have been several incidents over the past 20 years which indicate the dirty bomb threat is real. (1) Chechnyan rebels directed a TV reporter to a park in central Moscow in 1995. When she reached there she found a package containing about 15lbs of explosives and cesium-137. This was the first known appearance of a dirty bomb. (2) Iraq tested a crude radiological device in 1987, according to frequently cited intelligence reports. (3) Operatives for Osama bin Laden in Sudan tried and failed to buy enriched uranium produced in South Africa on the black market. (4) American-led forces discovered some documents in Afghanistan which contained detailed information on the making and use of a dirty bomb in fall of 2001. (5) Police arrested Jose Padilla (Abdullah al Muhajir). Apparently, he received $10,000 from Al Qaeda to carry out a dirty bomb explosion. (6) A large number of radioactive items that can be used to make dirty bombs are unaccounted for in the USA and Russia. (7) About 280 confirmed cases of illicit trafficking in radioactive materials since 1993 been reported.

"There is a 10 to 40 percent chance that terrorists will conduct a successful attack with a crude 'dirty bomb' in the next five to 10 years", said David Albright, president of the Institute for Science and International Security.

5. UNINTENDED COMPARABLE INCIDENCES

There are several unintended comparable incidences which indicate that a dirty bomb could create massive disruption.

5.1 Goiania, Brazil: A scrap merchant stole a radiation therapy source from a hospital (which was closed) in Goiania, Brazil in 1987. It contained a small amount (size of a cigarette lighter) of highly concentrated radioactive cesium chloride. He cut the source and the powder was released and contaminated the area. The radioactive dust was tracked throughout Goiania. Nearly two hundred people were exposed to high dose of radaition. Four died, including a four-year-old girl who had eaten a sandwich after playing with blue radioactive powder. She was buried in a lead coffin sealed in concrete. Pavements, buildings, etc. needed to be scrubbed and scraped. Contaminated soil had to be dug up and carted away. Some homes that couldn't be cleaned were carted away. Decontamination took six months. The radioactive material created 5,000 cubic meters of waste. More than 100,000 people (~10% population) demanded screening. Everyone wanted to be monitored. The long-term socio-economic effects were devastating. Goiania suffered a 20% drop in gross domestic product. Tourism dropped to zero. Demand for food and other products plummeted.



Photos of the scrap yard, demolition of a building and carting of contaminated soil.

5.2 Georgia, 2001: Two men were admitted to a hospital with terrible radiation burns in December 2001 in Georgia. They had spent a night in a forest beside a small, warm, metal cylinder. Radiation detectors indicated that the cylinders contained concentrated strontium-90, which emits beta radiation. When beta particles interact with matter, they generate an intense heat. This kind of generator could run for decades without refueling as they could produce an internal temperature of over 800 degrees and convert that heat into electricity. The Soviets had built thousands of these generators. Therefore, the ingredients for a dirty bomb could be all over the former Soviet Union. U.N. investigators have established that the former Soviet Union is littered with forgotten cesium chloride. Unfortunately, no one knows whether any of it has already fallen into the wrong hands.

5.3 Chernobyl, Ukraine: The explosion of Chernobyl's nuclear power plant is well known. It released huge amounts of strontium-90, iodine-131 and other radioisotopes which forced the permanent evacuation of hundreds of square miles in the Ukraine. About 2,000 children developed thyroid cancer as a result of Chernobyl.

6. RADIOACTIVE MATERIALS AND RADIATION

Radioactive uranium, plutonium, cesium and cobalt emit high energy ionizing radiations. High energy radiations, such as x-ray/gamma-ray, electrons, protons and neutrons emitted by radioactive materials can produce cancer. X-ray/gamma ray and neutrons can pass right through the human body. High energy radiation can knock electrons from an atom. This process is called ionization and radiations which cause ionization are known as ionizing radiation. Ionizing radiations are also referred to simply as radiation in this report.

Ionization can damage cells and to DNA of human cells. Damaged DNA might mutate, can cause cancer. We can't see, smell or feel ionizing radiation but it can cause cancer.

Radioactive materials are available because we use them to destroy bacteria from food, sterilization of pharmaceutical & medical products, killing cancer cells, inspecting welds/joints and exploring for oil. About 21,000 licensed organizations in the U.S. use radiation sources.

6.1 Life of radioactive elements: The radioactive elements decay, i.e., loose their activity with time. The decay is measured in half life, time required for the radioactivity to reduce to the half. The half life of some of elements is shown in below:

Element	Half life
Uranium-235	Billions of years
Carbon-14	5730 years
Strontium-90	28 years (beta)
Ce-137	30.2 years
Co-60	5.27 years

As the half life of these and other radioactive elements is very long, contaminated area either should be cleaned or have to be abandoned.

7. EXPOSURE TO IONIZING RADIATION

We get exposed to ionizing radiation in a variety of ways:

- From cosmic rays
- From trace uranium under our feet
- From potassium-40 in the food we eat
  - 0.01% of potassium is radioactive
  - Second largest source of background radiation

DNA is most important part of cells. Damaged DNA can lead to cell malfunction/cancer or death. Our bodies have a highly efficient DNA repair mechanism. We evolved to live with low level of radiation. Rapidly dividing cells are more susceptible to radiation damage. Examples of radiosensitive cells are blood forming cells (bone marrow), intestinal lining, hair follicles and fetus. Hence, these develop cancer first. Our body has natural defenses against normal low level of radiation. Scientists agree that higher level (e.g., 50 times) than normal could easily overwhelm our defenses.

7.1 Effect of radiation on human: A very small amount of radiation could trigger cancer in the long term. It may take decades for cancer to appear. There is no doubt that radiation can cause cancer. The doubt is what level of radiation it takes to cause cancer. The risks of low-level radiation are fiercely debated. There's no question that high levels are dangerous. The US EPA mandates that contaminated areas be cleaned up so that there is a risk of, at the most, one in 10,000 (This additional risk is equivalent to having 25 chest x-rays over

one's lifetime). On average, if *2,500* people are exposed to a single rem/rad of radiation, one will die of an induced cancer.

8. UNITS OF RADIATION

Radioactivity is measured in Becquerel (Bq). 1 Bq means one disintegration per second. It is also measured in Curie (Ci). 1 Curie = 3.7 x 10^{10} Bq or disintegrations. The radiation absorbed dose is measured in Gray, rad, rem and Sievert (Sv).

1 Gray (Gy) = 100 rads
1 Rad = Absorption of 100 ergs of energy per gram.
1 Rem = 96 ergs for soft tissue
1 Sievert (Sv) = 100 rems

9. TYPICAL RADIATION EXPOSURE LEVELS

Table 2 shows typical radiation exposures.

Table 2: Typical radiation exposures.

Chest X-ray	0.03 rad
Natural background	0.25 rad/year
Gastric fluoroscopy	0.4 rad
Radiation Workers	5 rads/yr (Limit)
CT (head and body)	1.1 rad
Hiroshiima/Nagaskai	20 rads (Average)
Acute radiation sickness	~100 rads
50% chance of death	>450 rads

10. EFFECT OF HIGH DOSE ON HUMAN

There are very little symptoms of exposure to low level of radiation. Effect of high dose is shown below.

0 to 25 rads:
- No detectable clinical effect in humans.

25 to 100 rads:
- Slight short-term reduction in blood cells.
- Disabling sickness not common.

100 to 200 rads:
- Nausea and fatigue.
- Vomiting if dose is greater than 125 rads.
- Longer-term reduction in number of some types of blood cells.

200 to 300 rads:
- Nausea and vomiting on the first day of exposure.

- Up to a two-week latent period followed by appetite loss, general malaise, sore throat, pallor, diarrhea, and moderate emaciation.
- Recovery in about three months unless complicated by infection or injury.

300 to 600 rads:

- Nausea, vomiting, and diarrhea in first few hours.
- Up to a one-week latent period followed by loss of appetite, fever, and general malaise in the second week.
- Followed by bleeding, inflammation of mouth and throat, diarrhea, and emaciation.
- Some deaths in two to six weeks.
- Eventual death for 50% if exposure is above 450 rems.
- Others recover in about six months.

Over 600 rem:

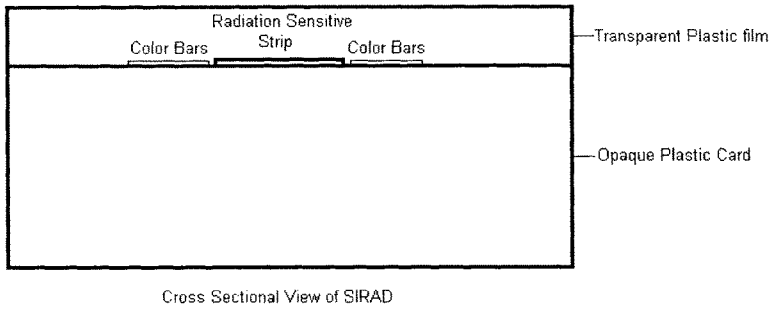
- Nausea, vomiting, and diarrhea in the first few hours.
- Followed by rapid emaciation and death in 2nd week.
- Eventual death of nearly 100%.

It has been established that exposure to each rem/rad increases that risk by 0.05% (1 in 2,000 would die from the induced cancer).

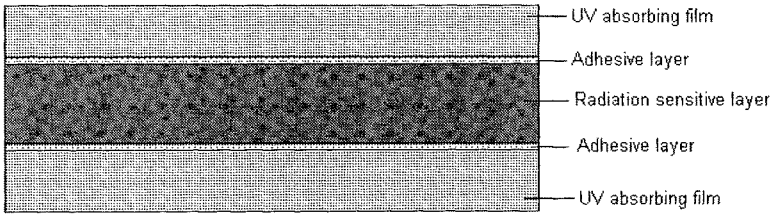
11. NEED FOR A LOW COST, SELF-INDICATING, INSTANT RADIATION DOSIMETER

In the event of a detonation of a dirty bomb, it is imperative that people affected by the bomb and first responders (police, firefighters, medical personnel, etc.) need to quickly assess radiation exposure. If people affected by a dirty bomb know their radiation exposure, the panic and concern can be minimized. If they have a simple, low cost, instant, self-indicating radiation dosimeter, they will know their radiation exposure. If they are not exposed to radiation or received a very low dose, they don't need to worry and would not need to run to a hospital. However, those who have received high dose may go to hospital and physicians would know whom to treat first. The first responders will know their exposure and will leave the area before they get over exposed to high energy radiation. Hence, there is a strong need for a simple, low cost, instant, self-indicating radiation dosimeter.

We have developed such a dosimeter. A cross sectional view of the dosimeter and sensing strip used to monitor are shown in Figures 3a and 3b respectively. When exposed to radiation from a "dirty bomb" or nuclear detonation, the sensing strip (Figure 3b) of SIRAD develops blue color instantly and the color intensifies as the dose increases (see Figure 4 for photos of a sensing strip exposed to different dosage of X-ray), providing the wearer and medical personnel instantaneous information on cumulative radiation exposure of the victim. People who have not received high dose will not rush to hospitals. This will minimize the panic and people who received high dose will be treated first. It can take days to get that information by other methods. SIRAD is inexpensive (under $10/badge).

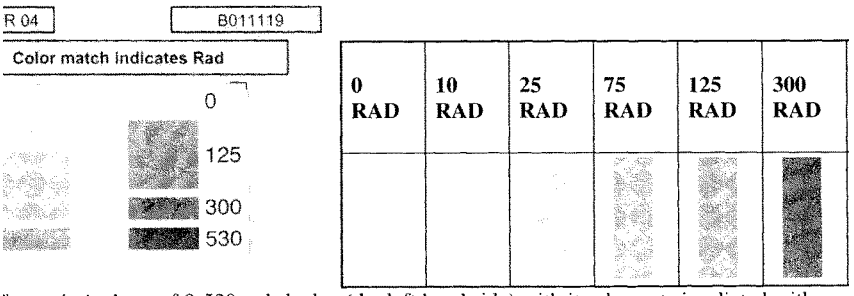


igure 3a: A schematic cross section (not to the scale) of the dosimeter badge.



igure 3b: A schematic cross section (not to the scale) of the element used to make the badges.

ı photograph of a SIRAD badge and its sensing strip exposed to different dosages are hown in Figure 4.



igure 4: A photo of 0-530 rads badge (the left hand side) with its elements irradiated with ifferent dosages of 100 KeV X-ray (strips on the right hand side).

12. MATERIALS AND MECHANISM OF RADIATION MONITORING

Materials used in the radiation sensitive element/strip of the dosimeter badge are a unique class of compounds called diacetylenes (R-C≡C-C≡C-R, where R is a substituent group). Dr. Gordhan Patel has been working on diacetylenes since 1974. Diacetylenes are colorless solid monomers. They usually form red or blue colored polymers/plastics, $[=(R)C-C\equiv C-C(R)]_n$, when irradiated with high energy radiations, such as X-ray, gamma ray, electrons, protons and neutrons. As exposure to radiation dose increase the color of the strip made from diacetylenes intensifies proportional to the dose. One can estimate the dose from color reference chart printed on each side of the strip.

The polymerization occurs via 1,4 *trans* addition reaction as shown in the Figure 5 below. In the solid state, diacetylene molecules are packed like the steps of a ladder as shown schematically on the left hand side of Figure 5. Polymerization is mainly initiated by the formation of radicals. Radicals are produced by ionizing radiation, such as gamma ray and electrons. The radicals propagate to form highly conjugated backbone polymer chains (the right hand side of Figure 5). The solid monomers are colorless or white, partially polymerized diacetylenes (polymer conversion below about 10%) are blue or red and polydiacetylenes (polymer conversion higher than 10%) are metallic, usually copper or gold color. Polydiacetylenes are highly colored because the "pi" electrons of the conjugated backbone are delocalized. The color intensity of the partially polymerized diacetylenes is proportional to the polymer conversion.

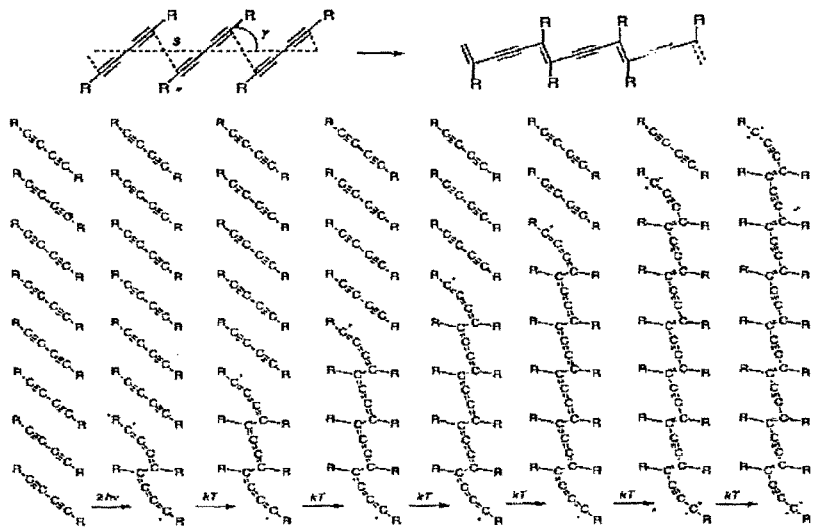


Figure 5. Polymerization of diacetylenes.

13. COMPARISON OF RADIATION DOSIMETERS

A variety of radiation detectors and dosimeters can be used for monitoring radiation exposures. They are compared in Table 3 below.

Table 3: Comparison of different radiation detectors and dosimeters.

	Electronic (Geiger..)	**Quartz Fiber**	**Film (AgBr)**	**TLD**	**SIRAD**
Approx. Price	$100	$50	$25	$25	$5
Sensitivity	Most	Good	Sufficient	Sufficient	Low
Dose range (rads)	NA	0-5	0-10	0-10,00	2-1,000
Response Time	Instant	Instant	Needs Developing	Needs analysis	Instant
Size	Bulky	Bulky	Small	Small	Smallest
Ambient	NA	NA	Protect Light	Protect UV	Almost none
Shock	Sturdy	Fragile	Sturdy	Sturdy	Sturdiest
Radiation	X-ray	X-ray	Most	Most	Most
Archiving	No	No	Yes	No	Yes
Shelf life	NA	NA	Month	Months	Months-year

14. WHAT "SIRAD" WILL NOT DO

SIRAD is not and will not do the following:

- It will not detect a dirty bomb.
- It will not detect radioactive material.
- It will not deter a terrorist attack.
- It is not a radiation detector (it is a dosimeter).
- It will not monitor low dose (less than 1 Rad).
- It will not monitor dose of pre-radiated material or people.
- It will not prevent radiation induced cancer.
- It will not protect people from radiation.
- It will not prevent property damage.

15. WHAT SIRAD WILL DO

In an event of dirty bomb explosion, SIRAD will do the following:

- It will monitor high dose (>5 Rad) which can induce cancer.
- It will provide an early warning to people to leave affected area.
- It will minimize the rush to the hospital.
- It will minimize strain on health care system.
- It will minimize fear/panic/havoc/turmoil.

- It will warn the first responders of the radiation exposure.
- It will help people in taking preventive care.
- It will make affected people vigilant of cancer

16. ADVANATGES OF SIRAD

SIRAD badge offers the following advantages over those available commercially.

- It is a simple, lightweight, inexpensive device.
- It is a self-developing instant dosimeter.
- It does not require power. It is always ready to use.
- No special equipment is required to read the dose.
- It is highly sensitive (monitor about a few rads).
- Dose can be estimated with an accuracy better than 20% with a color-matching reference chart.
- Dose can be determined with accuracy of ~10% with a spectrophotometer or an optical densitometer.
- It can be used over a wide dose range (1 - 5,000 rads). Higher dose can also be estimated.
- The color development will be essentially independent of the energy and the dose rate.
- It will monitor all kind of high energy radiations, such as X-ray, gamma ray, electrons, and neutrons.
- It will be tissue equivalent and hence no corrections will be required.
- No toxic chemicals are used.
- It is unaffected by ambient conditions, e.g., temperature, and humidity.
- No effect of temperature of irradiation (-20 to 60°C).
- Reasonable protection from sunlight.

17. JP LABS, TSWG AND FEDERAL FUNDING

JP Laboratories Inc. is a product research and development company. We develop new products/processes and license them to other companies for manufacturing and marketing. Though we are a small company, our research interests are very diverse from chemistry to physics to metallurgy to biology. We have several major areas of research and development: (1) Color changing indicators for perishables, such as foods, (2) Color changing indicators for monitoring sterilization of medical supplies, (3) Radiation sensitive devices, (4) Synthetic lipids (5) Etching and metallization of plastics and (6) Synthetic blood. We have received some federal funding for most of the products listed above.

After the attacks of September 11th, TSWG solicited proposals for products to combat terrorism. The proposal to TSWG was submitted in collaboration with Dr. Gordon Riel and Robert Rogalski of Naval Surface Warfare Center, Carderock Division, West Bethesda, MD. 12,000 proposals were submitted, of which approximately 60 were selected for funding. SIRAD was amongst the first few to receive funding.

I recently had the opportunity to meet many first responders at the "Technologies for Public Safety in Critical Incidence Response" Conference in St. Louis, MO from September 23-25, 2003. TSWG has helped many organizations put a number of products and processes into the hands of first responders to fight terrorism. We believe TSWG can do an even better job if it becomes an independent agency with a larger budget.

18. FEDERAL FUNDING RELATED TO SIRAD DOSIMETER

Funding from the Navy and TSWG was specifically for development of the radiation dosimeter.

1. DHHS: National Cancer Institute.
   Title: Film Dosimeter for Neutron Therapy.
   Contract # R44-CA-49347.
   Period: Sept. 30, 1990 - Aug. 31, 1992.
   SBIR phase I&II (~$550,000).
   (Basic technology to make the radiation sensing strip, for monitoring radiation therapy, was developed under this grant).

2. DoD: Naval Sea System Command.
   Title: A Low-Cost Self-Indicating Radiation Dosimeter.
   Contract # N00024-95-C-4052.
   Period: April 1, 1995 to Dec. 10, 1997.
   SBIR phase I&II ($~800,000).
   (The first prototype SIRAD was developed under this contract).

3. TSWG/DoD: Naval Surface Warfare Center, Carderock Division.
   (A subcontract for $105,000 from the Technical Support Working Group).
   Contract # N00167-03-M-0037.
   Period: February 1 – April 30, 2003.

4. TSWG:
   Title: Smart Radiation Dosimeter.
   JP Laboratories' proposal to develop the next generation of SIRAD badge, which is self reading and displays false positive signals, has been selected for funding by TSWG and a contract is at the final stage of negotiation.

In addition to the above federal funding, JP Laboratories has made a significant investment of its own to bring this product to market. SIRAD has become our highest priority.

ACKNOWLEDGEMENT

We acknowledge funding from DHHS, DoD and TSWG as listed above (**18. FEDERAL FUNDING RELATED TO SIRAD DOSIMETER**) as well as help from the following individuals.

- Gordon Riel, Naval Surface Warfare Center, Carderock Division
- Rob Rogalski, Naval Surface Warfare Center, Carderock Division
- Shannon Rowe, JP Laboratories, Inc.
- Paresh Patel, JP Laboratories, Inc.

LITERATURE

1. M. A. Levi and H. C. Kelly, Scientific American, November 2002.

2. PBS TV Station (WGBH Boston), Airdate: February 25, 2003, Transcript at http://www.pbs.org/wgbh/nova/transcripts/3007_dirtybom.html,

3. G. N. Patel, The Final Progress Report entitled "A Low-Cost Self-Indicating Radiation Dosimeter" for Contract # N00024-95-C-405 (1997) from the U.S. Navy.

Mr. SHAYS. During the course of your testimony, you may want to tell us whether this was something that the government ideally is using, or whether it is going to go on the open market. I am not going to you ask to respond now, Dr. Patel, but if you can incorporate in your statements, it would be helpful if you can.

Mr. SAWICKI. Good afternoon. My name is Jack Sawicki. It is an honor to be invited to testify before you today on our experience with the Technical Support Working Group, or TSWG.

I am director of business development for GEOMET Technologies, a division of Versar Corp., a small business headquartered in Springfield, VA. We have been in the business of response, testing, research and development with chemical and biological agents and other hazardous materials for over 30 years. I also live in Arlington, VA, where I am a member of the Cherry Hill Volunteer Fire Department and represented Arlington from 1999 until September 2001 on the Department of Defense/Department of Justice interagency group for counterterrorism.

GEOMET was first awarded our first TSWG contract to develop these personal protective ensembles for first responders and medical personnel. DTAPEs, Disposal Toxic Agent Protective Ensembles, and I have two here today, were designed to provide protection from chemical, biological, and radiological materials of terrorist or industrial origin, and these were actually submitted, to answer your question, sir, to a very general requirement that came out, and were specifically targeted to these users.

One of the requirements that we had in the negotiations was the proper integration of protective suits with boots, gloves and respirators, without the use of inherently unreliable field expedient measures, such as duct tape. And one of the comments I would like to make to Mr. Tierney, that that specific requirement was given us in a meeting with Massachusetts General Hospital, when we had the users in the emergency room at one of earlier demonstrations there. They said, we don't have time to be fooling around with tape and things like that when we actually have an emergency.

We developed four systems, two for firefighters and HAZMAT teams that typically use self-contained breathing apparatus, one for emergency medical service personnel that you would normally see on ambulances or on other types of response equipment, and one for hospital emergency personnel. The EMS and hospital resulted in the ones we have today, the hospital personnel, and the green one for the first responders. Those items are currently offered for sale by our firm with several subcontractors, including the DuPont Co. and Global Secure, Onguard and North Safety Co.

One barrier we have encountered in the marketplace that tries—to show you some of the problems, I guess, we see with the process is that many users are still accepting cheap or what I call duct tape fixes in purchasing all kinds of equipment with Federal funds, even though they do not meet applicable safety standards, such as those from the National Fire Protection Association that have actually been endorsed by the interagency board. I would suggest that Congress in the future might do some work in that area, to try to make sure that equipment that first responders do get does meet these minimum standards.

Another contract that GEOMET has had with TSWG was the Rapid Contaminated Carcass and Plant Disposal System—if I could have that third picture—which was funded by the U.S. Department of Agriculture. The charge in this program was to design a portable system that could be distributed to each State, probably to the veterinary colleges, and could be rapidly trucked to outbreak sites throughout the United States. The incinerators must safely burn plant or animal materials that were contaminated with biological agents such as anthrax, hoof and mouth, etc. Currently the state-of-the-art for disposal of such material is open burning or burial, neither of which are completely effective.

One requirement with the system had to—that the system had to automatically accept entire longhorn steers, which weigh up to about 2,000 pounds, tree trunks, truckloads of chickens, etc., at a minimum rate of 120,000 pounds per day, without putting out any pollution. To do this, if you are into technology, our guys went crazy with this. We had a grinder with an 80,000-pound blade, which was required to take these longhorn steers. It is quite a neat design. Unfortunately, the design phase was successfully completed; the project was canceled due to lack of funding.

Again, if you can see the picture up there, the material is dumped into the front end, and basically everything automatically comes out the back end as smoke and ash.

And the veterinarians at USDA that were over in the UK burning the carcases from the hoof and mouth disease over there were the big proponents of that effort. They really felt that there was a lot of contamination spread from just open burning.

I might add in Virginia where I live, a lot of chicken feathers ended up in people's swimming pools and houses miles away from this last incident that we had where they burned something like a million chickens. They had open burial pits in the Shenandoah Valley.

In 2002, we were awarded another TSWG contract to develop a heat stress calculator, which was given earlier, and we got into this as our firm has personal experience to the history of performing environmental remediation. And we did the disinfection of GSA Building 401, which processes the mail for the executive branch, and we also handled part of the cleanup of the Soviet Union biological weapons dump site in Uzbekistan, where the temperatures were around 100 degrees in both cases. Again, the heat stress calculator allowed workers to determine how long they can safely operate in personal protective equipment. And I might add, our subcontractor on that was the former Director of the U.S. Army Research Institution of Environmental Medicine up in Massachusetts.

Our experience with TSWG has been generally good. We have one suggestion for improving the process. The one-page quad chart format in some cases did not allow sufficient space to provide enough information for evaluation, in our opinion. And we suggest that firms be allowed to provide a two-page mini white paper at the same time they put in the quad chart. If the reviewers were to see a quad chart that interests them but have questions about the proposal, the two-page white paper could be consulted for additional information. And we believe that there may be some propos-

als that have not been funded as reviewers were not able to fully understand the concept based on the small, small picture.

Mr. SHAYS. Thank you very much, sir.

[The prepared statement of Mr. Sawicki follows:]

Testimony of Jack Sawicki, September 29, 2003
Committee on Government Reform
Subcommittee on National Security, Emerging Threats, and International Relations

Good afternoon, my name is Jack Sawicki, and it is an honor to be invited to testify before you today on our experience with the Technical Support Working Group, or "TSWG." I am Director of Business Development for the GEOMET Technologies Division of Versar Corporation, a Small Business headquartered in Springfield, Virginia. We have been in the business of response, testing, research, and development with chemical and biological agents and other hazardous materials for almost 30 years. I have been with GEOMET for 13 years and am responsible for our proposal efforts, as well as research and development. I live in Arlington, Virginia, where I am a member of the Cherrydale Volunteer Fire Department and the Arlington, Pentagon, and Alexandria Local Emergency Planning Committee. I also represented Arlington from 1991 until September 2001 on the Department of Defense/Department of Justice Interagency Board, or IAB. Prior to becoming involved with research and development, I was a First Responder in Alexandria, Virginia, and before that, with the Federal Government.

GEOMET was awarded our first TSWG contract in 1998 to develop personal protective ensembles for First Responders and medical personnel. DTAPS—Disposable Toxic Agent Protective Ensembles—are designed to provide protection from chemical, biological, and radiological materials, of terrorist and industrial origin. A specific requirement was the proper integration of protective suits with boots, gloves, and respirators, without the use of unreliable field expedient measures such as duct tape. Four systems were developed, two for firefighters and hazmat teams that typically use SCBAs—or self contained breathing apparatus, one for EMS--Emergency Medical Services personnel, and one for hospital emergency personnel. The EMS and Hospital Ensembles are shown in Figures 1 and 2, and we also have samples here today.

These items are currently offered for sale by our firm, with several subcontractors, including the DuPont company and Global Secure, Onguard and North Safety companies. One barrier we have encountered in the marketplace, is that users are still accepting cheaper "duct tape fixes" in purchasing equipment with Federal Funds, even though they do not meet applicable safety standards, such as those from the National Fire Protective Association, that have been endorsed by the IAB. In fact, at a recent meeting, which I attended as an observer, the IAB asked the Government to require that future purchases of such equipment meet these important Standards. We encourage the Congress to do the same.

Another contract that GEOMET was awarded via TSWG in 2000 was the Rapid Contaminated Carcass and Plant Disposal System. This system was funded by the U.S. Department of Agriculture. The charge was to design portable systems, that could be distributed to each state, and could be rapidly trucked to outbreak sites around the U.S. The incinerators must safely burn plant or animal materials that were contaminated with biological agents, such as anthrax, hoof and mouth and chronic wasting disease, citrus canker, etc. Currently, the state of the art for disposal of such material is open burning,

or burial, neither of which are completely effective. One requirement was that the system had to automatically accept such difficult items as entire long-horn steers, tree trunks, truckloads of chickens, etc., at a rate of 120,000 pounds per day. To do this, a grinder with an 80,000 pound blade was developed. The Design Phase of the device was successfully completed in 2002, although the project was cancelled due to lack of funding before a prototype was built and tested. This system design is illustrated in Figure 3.

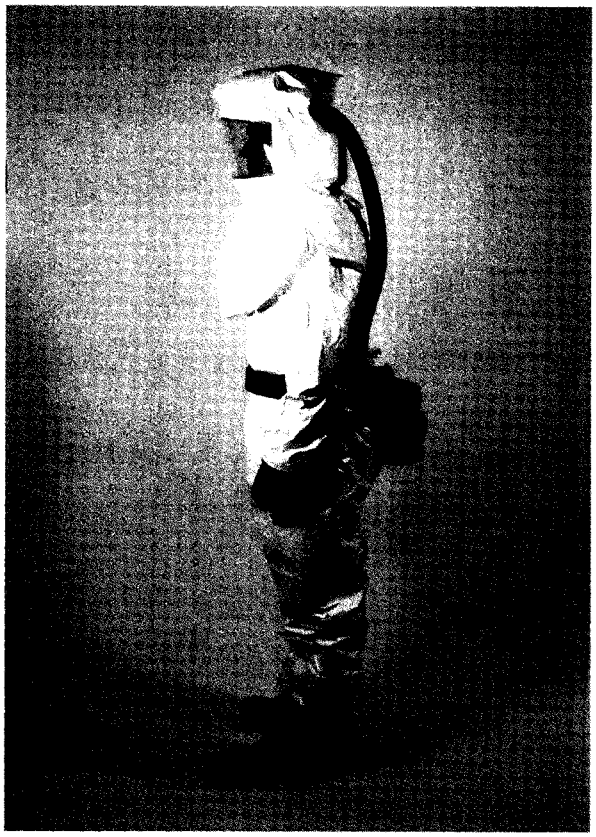
In 2002 we were awarded another TSWG contract to develop a Heat Stress Calculator. Our firm has personal experience in this due to our history of performing environmental remediation. Two recent examples are the disinfection of GSA building 401 which processes mail for the Executive Branch, and the Former Soviet Union biological weapons dumpsite in Uzbekistan. Our Heat Stress Calculator will allow workers to determine how long they can safely operate in personal protective equipment.

Our experience in the TSWG process has generally been good. There are three sequential submittals in obtaining these contracts. First, a one-page "Quad Chart" is submitted, which is shown to potential Government funders. If accepted, a 12 page "White Paper" is submitted. The last step is submittal of a Full Proposal. We have submitted several dozen Quad Charts, around a half dozen White Papers, and have had three awards, which is considered a good track record.

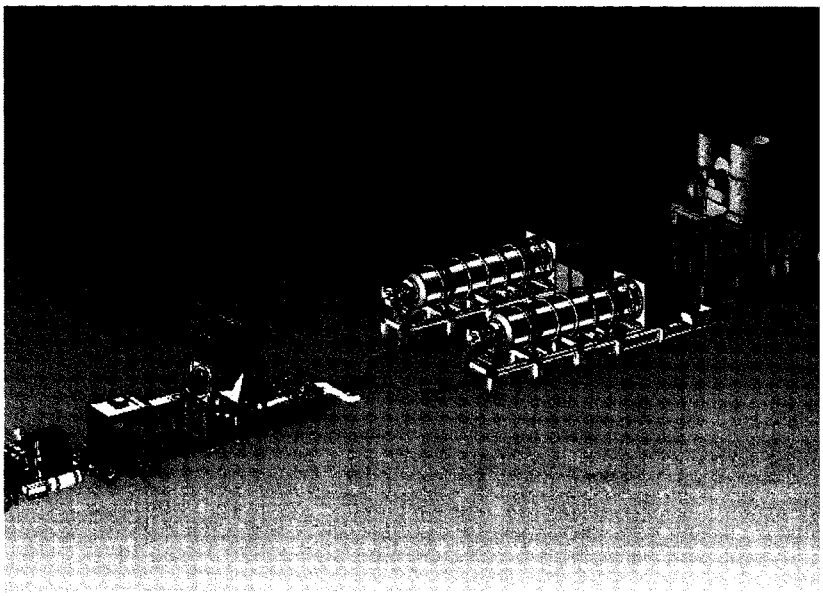
We have one suggestion for improving this process. The one-page Quad Chart format does not allow sufficient space to provide enough information for evaluation. We suggest that firms be allowed to provide a two-page Mini-White Paper at the same time. If reviewers see a Quad Chart that interests them, but have questions about the proposal, the two-page White Paper could be consulted for additional information. We believe that some valuable TSWG proposals may not been funded as reviewers were not able to fully understand the concept based on the limited information that can be presented in the Quad Chart format. Submittal of a two page Mini-White Paper would not present an undue burden on either companies or the Government.

I appreciate the opportunity to testify here today and am happy to answer any questions.

1. DTAPS EMS Ensemble



2. DTAPS Hospital Ensemble



3. Rapid Contaminated Carcass and Plant Disposal System

Mr. SHAYS. Mr. Sword.

Mr. SWORD. Thank you, Mr. Chairman.

Mr. SHAYS. You know, we do not allow people who testify before us to play with toys, sir. Last week, I had someone who was eating at the table, so this is getting a little strange here. Tell us about it. I am sorry. We will start your clock over again here.

Mr. SWORD. Thank you, Mr. Chairman, and members of this distinguished subcommittee for the honor to testify on my company's experience with and opinions of the technical support working group process. I Robot Corp. is a young entrepreneurial company in Burlington, MA. While we are a small business, we are the largest supplier of mobile robots, and recognized as a technological leader in our field. My name is Lee Sword, and I am a program manager in the military systems division of i Robot. I lead the five TSWG funded projects that are investigating technologies for the next generation of explosive ordinance disposal tools. My remarks today will include i Robot's experiences with the TSWG process, a brief capitalistic view of my project's target market, and conclude with my opinion related to a potential improvement in the process.

I Robot is in the business to bring robotic technology into the mainstream through defense and commercial channels. Our team of 76 dedicated engineers have worked on robotics systems that ventured miles into the Earth, journeyed to other planets, revealed insights into civilizations that no longer exist, and have improved the situational awareness of our troops in combat. We have submitted a total of 34 responses to four different broad agency announcements from TSWG. Solicitations to which we responded span the spectrum from the narrow focus of requesting a next generation of explosive ordinance disposal robotic tools to the more general request for technology to combat terrorism.

In each case, we believe that the solicitations were posted with appropriate technical detail, clear instructions with regard to how to properly respond, and provided reasonable timeframes for the responses to be generated. Noteworthy is the fact that none of the solicitations initially requested full proposals but instead asked for either white papers or single page quad charts. Five of i Robot's 34 responses to TSWG generated requests for full proposals, and all five have resulted in contracts to develop proof of concept prototypes.

TSWG and i Robot share some common visions for the future of robotics. We share the opinion that in order to be useful, advanced technologies must be developed with the end users' needs in mind. Without clear objectives and measurable success criteria, scientists and engineers will tend to create really cool but useless technology.

The benefit of modular designs is another shared vision that has already served our company well. The robot presented at this hearing was configured as an explosive ordinance disposal robot, yet shares the same base chassis as those currently in use by our forces in Afghanistan and Iraq.

Our robots deployed overseas have a scout payload installed where the EOD arm is on this robot.

The need for interoperability is a third area of shared vision. TSWG is defining a common architecture for robots, payloads, and control units that will allow compliant equipment for multiple ven-

dors to seamlessly integrate into useful systems. We at i Robot endorse this approach, and are working with TSWG to refine and mature the concept so true plug and play capability can be delivered to the end user.

The end users for the next generation tools being developed are local, State, and federally supported bomb squads. Given the total number of active bomb squads in existence, there is very little financial incentive for private industry to invest large sums of money in break-through technologies. The past two decades have seen only small evolutionary changes to existing equipment, but the recent infusion of money from TSWG is causing revolutionary changes in the capability and utility of EOD equipment that otherwise may have taken many years to incur on its own. I Robot's experience with the TSWG process was and continues to be a positive one. The entire process from release of the broad agency announcement to issuance of development contracts is handled in a professional manner by experienced individuals that obviously have a good grasp of the end users' needs with an understanding of the limitations of the available equipment. My one recommendation for improvement in the TSWG process would involve implementing some mechanism for quickly increasing staffing levels to address unanticipated workloads. I'm specifically addressing the overload experience following the release of the homeland defense broad agency announcement where a total of 12,500 responses were received.

Thank you, Mr. Chairman. This concludes my statements.

Mr. SHAYS. Thank you.

[The prepared statement of Mr. Sword follows:]

www.irobot.com

iRobot

Lee Frank Sword
Lead Mechanical Engineer
iRobot Military Division

Counterterrorism Technology:
Picking Winners and Losers

Testimony

Before the Subcommittee on National Security, Emerging Threats, and International Relations, Committee on Government Reform, House of Representatives

tel (781) 345-0200
fax (781) 345-0201

63 South Avenue
Burlington, MA 01803

Counterterrorism Technology: Picking winners and Losers

Thank you, Mr. Chairman and members of this distinguished subcommittee, for the honor to testify on my company's experience with, and opinions of, the Technical Support Working Group (TSWG) process of identifying and promoting promising new technologies. iRobot Corporation is a young entrepreneurial company in Burlington Ma. While we are a small business, we are the largest supplier of mobile robots and recognized as the technological leader in our field. My name is Lee Sword and I am a program manager in the Military Systems division of iRobot. I lead the five TSWG-funded projects that are investigating technologies for the next generation of Explosive Ordnance Disposal (EOD) tools. Four of the projects are past the midpoint of two year contracts to develop proof of concept prototypes. The fifth project is a Phase 2 contract that will advance the state of maturity of an intelligent tether management system to a level that facilitates small quantity manufacturing. My remarks today, will include iRobot's experiences with the TSWG process of identifying and promoting promising new technologies, a brief capitalistic view of my projects target market, and I will conclude with my opinions related to potential improvements in the process.

iRobot is in business to bring robotic technology into the mainstream through defense and commercial channels. We have participated in more than 27 research and development robotics programs for the defense industry, (contracts totaling over $60 million). Hundreds of Thousands of our Roomba robotic vacuums and hundreds of research and military mobile robotic systems have been delivered throughout the world. Our program sponsors include: the Army, Marines, Special Operations, DARPA, and Office of Naval Research.

Our engineers come to us from institutions such as, MIT, CMU, Draper Labs, Honeywell, Disney's Imagineering Labs and NASA. Our team worked on robotic systems that ventured miles into the earth, journeyed to other planets, revealed insights into civilizations that no longer exist, and improved the situational awareness of our troops in combat situations. iRobot is one of the largest robotics companies in the world with a team of 76 dedicated engineers.

iRobot Corporation has submitted a total of 34 responses to four different Broad Agency Announcements (BAAs) from TSWG. Initially, each solicitation was brought to our attention through a press release from the Department of Defense. Solicitations to which we responded, span the spectrum from the narrow focus of requesting a next generation of Explosive Ordnance Disposal (EOD) robotics tools (02-Q-4653) to the more general request for technology to combat terrorism (02-Q-4655). In each case, we believe that the solicitations were posted with appropriate technical detail, clear instructions with regard to how to properly respond, and provided reasonable time frames for the responses to be generated.

Noteworthy, is the fact that none of the solicitations initially requested "full" proposals, but instead asked for either "white papers" when the expected number of responses was relatively small, or "quad charts" when the number was expected to be high. This approach not only allows companies to find out if there is an interest in their proposed ideas without huge expenditures of internal Bid & Proposal money, but also greatly reduces the burden on the reviewers. Once an idea was identified as relevant and plausible, TSWG

would request that a full proposal be submitted for further review. Five of iRobot's 34 responses to TSWG resulted in requests for full proposals, and all five have resulted in contracts to develop proof of concept prototypes.

In mid-2001, iRobot was selected by the UK Ministry of Defense (MOD) as prime contractor for the design and development of a Man-portable Remote Control Vehicle with its associated Portable Command and Control System. The system, called ICECAP, is based on iRobot's man-portable PackBot platform and will be used on both Improvised Explosive Device Defeat (IEDD) and conventional munitions disposal (CMD) tasks. Utilizing the PackBot's modular chassis with payload ports, the ICECAP system adds a fiber optic tether system and an 8-degree of freedom manipulator. Extensive field trials have been performed on these robots demonstrating them to be highly rugged and capable EOD systems. Working closely with the UK EOD operators, iRobot received valuable feedback leading to design changes and enhancements.

iRobot believes our involvement with the ICECAP program funded by the UK Ministry of Defense influenced the selection process in two very significant ways. First, we acquired an awareness of strengths and weaknesses of existing EOD equipment, or perhaps more important what the users liked and disliked. Second, the MOD's belief (backed by development funding) in our technical approach added credibility to our proposals for a next generation of EOD robotics tools for the US Government. The leading edge technologies developed with ICECAP funding (adapted for the US and marketed as PackBot EOD), have influenced in a very positive way the contracts currently underway with TSWG. This serves as a very good

example of how TSWG's international connections positively influence the path of technology development here in the US.

Working through the solicitation process, contract negotiations, and subsequent execution of the development contracts, it has become clear that TSWG and iRobot share some common visions for the future of robotics. We share the opinion that in order to be useful, advanced technologies must be developed with the end-user's needs in mind. Without clear objectives and measurable success criteria, engineers will tend to create really cool but useless technology. The benefit of modular designs is another shared vision that has already served our company well. The robot presented at this hearing was configured as an Explosive Ordnance Disposal robot, yet shares the same base chassis as those currently in use by our forces in Afghanistan and Iraq. The robots deployed overseas have a scout payload installed where the EOD arm on this robot is currently mounted, and do not have the fiber optic spooler. The need for interoperability is a third area of shared vision for the future of robotics. TSWG is defining a common architecture that includes the physical, electrical, and logical layers for robots, payloads, and control units that will allow compliant equipment from multiple vendors to seamlessly integrate into useful systems. We at iRobot endorse this approach, and are working with TSWG to refine and mature the concept so true "plug-and-play" capability can be delivered to the end user.

The end-users for the next generation tools being developed in all five of the TSWG funded iRobot projects are: local, state, and federally supported "bomb squads." The technicians and support personnel within these organizations form a small and tight community. Within this small

community, information disseminates quickly (technological success or failure), past performance and reputation of vendors is extremely important, and results in a situation where brand loyalty creates a tough market for new players. Hand-in-hand with the fact that EOD is a small community is the fact that it is a small market. Given the total number of active bomb squads in existence, there is very little financial incentive for private industry to invest large sums of money in "breakthrough" technologies. The past two decades have seen only evolutionary changes to existing equipment. The infusion of money from TSWG is causing revolutionary changes in the capability and utility of EOD equipment that otherwise may have taken many years to occur on its own. [1]

iRobot's experience with the TSWG process was, and continues to be a positive one. The entire process from release of the Broad Agency Announcement, to issuance of development contracts is handled in a professional manner, by experienced individuals that obviously have a good grasp of the end-user's needs with an understanding of the limitations of the available equipment. My recommendation for improvements in the TSWG process would involve implementing a mechanism for quickly increasing staffing levels to address unanticipated workload. I am specifically addressing the overload experienced following the release of the homeland defense Broad Agency Announcement, where a total of 12,500 responses were received.

Thank you Mr. Chairman, this concludes my statement.

1

Mr. SHAYS. Mr. Tierney just pointed out that you live in his district. Is this correct?

Mr. SWORD. Yes, sir.

Mr. SHAYS. Terrific. But you are still, Mr. Ducey, first among equals here.

Mr. MASTRONARDI. Yes. Mr. Chairman and members of the committee, on behalf of American Science and Engineering, AS&E, I would like to thank you for the opportunity to talk to you today about our relationship with TSWG, and where I think it has been beneficial both to our company and to the Nation.

We have a relationship with TSWG that goes back to as far as 1998, from what I can determine.

Since the tragedy of September 11th, the role of TSWG has become more important than ever. I believe that the mandate that they have to identify appropriate technologies and facilitate the rapid prototyping of these technologies is extremely vital. Our company has been in business since 1958, and we have pioneered a lot of work in detection and advancing the fields of x-ray astronomy, medical imaging, non-destructive testing, and, more importantly today, security screening. Anyone in this room has passed through a security checkpoint in this building that uses AS&E equipment. If you had an object x-rayed today, it was with our equipment. The same would be true of pretty much every government building in Washington, DC. Our equipment is used every day throughout the world to inspect a broad range of items; these range from pocketbooks of people entering the White House to deliver goods at Andrews Air Force base to cargo containers that are entering the port of Hong Kong.

For our company, it's a constant challenge to keep up with the terrorists who are perfecting methods to circumvent security measures every day. And I believe this is where TSWG comes into the picture. TSWG can support this effort by speeding up the time to market of many new technologies, and most recently TSWG has agreed to help us develop and test a new product called the Z Backscatter Van [ZBV]. I have enclosed a couple figures in the testimony that might be helpful.

This single-sided x-ray product uses our patented Z Backscatter technology to identify hidden contraband. It's built into a small, maneuverable delivery-type van that allows the user to both covertly or overtly look into vehicles and cargo containers. It can easily identify explosives, weapons, and in some cases, can be used to effectively look under people's clothing to find suicide bombs.

We have an additional capability that we offer on this product called Radioactive Threat Detection. This can identify the radioactive materials that are often associated with dirty bombs; they are typically gamma emitters. There is also a capability to detect neutron emitters that are often the materials that are used to make nuclear weapons.

Recognizing the potential of this product, ZBV, TSWG has agreed to help us develop additional capabilities. These capabilities include the ability to operate in remote and quite challenging hostile environments such as that in Iraq. What they are going to help us develop is remote operation capability. This will allow us to operate the equipment in a covert manner and to keep our soldiers and

personnel sufficiently distant from the process so that, if any explosion occurs, they will not get blown up.

We find that TSWG has very accessible and user friendly Web site, and it is often the starting point of any project like ours. This project, by the way, was in response to a broad agency announcement. It has broad appeal, but the near-term deployment and where TSWG is providing focus is in the high-threat regions.

As a member of the TSWG Web site, we are kept aware of the opportunities through the broad agency announcements. Our first submittal, like everybody's, is a quad chart. We provide a concept drawing of the idea, a description of how it would meet an operational capability that's been asked for, and it gives TSWG a rough order of magnitude of cost, schedule, and deliverables. This one-page document responds to—is supposed to be responded to in as little at 45 days and sometimes takes longer, several months. I think everybody else has described the next step, which is a white paper, which also takes some time, and a proposal. We understand that TSWG often has something in excess of 12,000 quad charts, and it's pretty daunting, to say the least. We believe that TSWG does an effective job of processing the high volume of interest, but I think as most companies will tell you, we wish the process could be faster.

Often, large amounts of time can transpire between various stages of the proposal process. In our case, this project has taken over a year from quad chart to contract.

TSWG has taken a number of initiatives to host meetings to discuss the upcoming projects and to educate companies how to be more effective in the proposal process. This is certainly one example of how TSWG is trying to speed up the process. In addition to speeding up the process, we have two recommendations that could be addressed by TSWG in order to make their process more effective. First, we believe that more detailed feedback on why quad charts or white papers are rejected would be helpful to submitters. Submitters would be better prepared for the next time.

Second, there appears to be a preference for funding a lot of the small projects and very few larger projects, and we believe the emphasis should be on the right technology to meet the demand of the requirements proposed by the operating organizations.

From our vantage point, we find the relationship with TSWG very beneficial to both parties. The people appear to be quite competent technically; they're dedicated, hard-working, and we also believe they are extremely busy and juggle multiple projects. Many of the issues that we feel are important today could be mitigated by additional staff. TSWG serves a vital role in helping companies like ours develop new technologies, and we are looking forward to our new project.

[The prepared statement of Mr. Mastronardi follows:]

Testimony by
American Science and Engineering Inc.

Hearing on the Technical Support Working Group (TSWG)
House Government Reform Subcommittee on National Security, Emerging Threats and International Relations

Mr. Chairman and members of the committee, on behalf of American Science and Engineering Inc. (AS&E), I would like to thank you for the opportunity to speak to you today about our relationship with the Technical Support Working Group (TSWG) and how that relationship has been beneficial to both our company and this nation. AS&E has had a longstanding relationship with TSWG that goes back to 1998. We look forward to continuing our mutual efforts.

Since the tragedy of September 11th 2001, the role of TSWG has become more important than ever. TSWG's mandate to identify appropriate technologies and facilitate the rapid prototyping of these technologies is vital to our nation's security.

American Science and Engineering has been in business since 1958. We have used our pioneering work in detection to advance the fields of x-ray astronomy, medical imaging, non-destructive testing and security screening. Dr. Riccardo Giacconi recently won the Nobel Prize in Physics for his discovery of the first X-ray source outside our solar system and for launching the field of X-ray Astronomy. He did that early work at AS&E. AS&E invented the Forth Generation Medical CAT scanner, which improved the quality of medical diagnostic X-rays. Every Trident missile motor and many other solid propellant rocket motors are X-rayed with equipment developed by AS&E to find flaws. Today, we provide the highest level of security screening to most government

agencies. Everyone in this room passed through a security checkpoint that uses AS&E's equipment. If you had an object X-rayed today, it was with an AS&E system. The same would be true if you visited almost every government building in Washington DC. Our X-ray security equipment is used each and every day throughout the World to inspect a broad range of items. These items range from pocketbooks of people visiting the White House to vehicles delivering goods to Andrews Air Force Base to cargo containers entering the port of Hong Kong.

As terrorists, drug smugglers and thieves perfect new methods for circumventing security measures, companies, such as ours, are continuously challenged with developing new technologies and products to counter their efforts. That is where TSWG comes in. TSWG can support this effort by speeding up the time-to-market of many new technologies. Most recently, TSWG has agreed to help us develop and test a new product called the Z Backscatter Van or ZBV. (see *figure 1 – Z Backscatter Van*) This single-sided X-ray product uses our patented Z Backscatter technology to identify hidden contraband and is built into a small and maneuverable delivery type van. It provides users a quick overt or covert way to look into vehicles and cargo containers. (see *figure 2 –Vehicle Explosive Detection with ZBV*) It can easily find materials such as explosives and weapons. In our war against terrorism and the continuing threat of suicide bombers, the ability to even see under people's clothing can be very effective in situations that demand such measures. (*see figure 3 – ZBV scanning Line of Prisoners*) With the addition of our Radioactive Threat Detection option, ZBV can also identify potential threats from radioactive materials hidden in the cargo simultaneous with the X-ray scanning process. We can detect very low levels of radioactivity from gamma emitters, the material used in making "dirty bombs" or neutron emitters, the fissile material used in making nuclear weapons. We can detect these materials even if they are well shielded. (*see figure 4 – Radioactive Threat Detection*) The detection of emerging

threats of such as dirty bombs or nuclear weapons is an important aspect of any security-screening device these days and should be included in any comprehensive inspection process. Recognizing the potential of the Z Backscatter Van and the application of this device in critical security-threaten areas like Iraq, TSWG has agreed to help us develop additional capabilities for the ZBV. These capabilities include the ability to operate ZBV remotely and enhancing the ruggedness of the equipment for survival in hostile environments. Remote operation allows operators to inspect vehicles or people from a secure area, reducing the risk from any explosion. TSWG is also planning to provide product improvement feedback by testing the ZBV's effectiveness in high threat applications. We are very excited about this collaborative effort with TSWG.

TSWG has a very accessible and user-friendly website that is often the starting point of a project such as ours. As a registered subscriber to the TSWG website, we are kept aware of opportunities for funding through Broad Agency Announcements (BAAs) that are published in the Federal Business Opportunities (FBO) listing. The listing and the supporting package of information describe the projects of interest. Our first submittal to TSWG is through a "Quad Chart" format, whereby we provide a photograph or artist's concept drawing of the project's objectives, a description of how the proposed system would provide enhanced operational capability, our proposed technical approach and the Rough Order of Magnitude (ROM) cost, schedule and deliverables. This is a one-page document that TSWG responds to in as little as 45 days and as long as several months. If the idea were accepted, we would be asked to submit a "White Paper", which includes a higher level of detail. The review of this "White Paper" and a response can also take a considerable amount of time. If TSWG still wants to move forward, we are then asked for a proposal that normally results in a contract. The process is well designed for screening ideas and provides a higher level of focus on

technologies that have merit. As we understand it, TSWG can often have over 12,000 "Quad Charts" submitted in response to a BAA, they select 10% for "White Papers" and then down-select 5% of those "White Papers" for proposal and awards.

We believe that TSWG does an effective job at processing such a high volume of interest in funding. As most companies will probably tell you, we wish the process could be faster. Often large amounts of time can transpire between various stages of the proposal process. The ZBV project took over a year from our "Quad Chart" to contract. TSWG has taken the initiative to periodically host meetings to discuss upcoming projects and to educate companies about how to be more effective in response to a BAA. We applaud this effort and often take advantage of these meetings. This is one example of how TSWG is trying to speed the process.

In addition to speeding up the process, we have two recommendations that should be addressed by TSWG in order to make their process more effective. First, more detailed feedback on why "Quad Charts" or "White Papers" were rejected would be helpful to submitters. Submitters would be better prepared the next time. Second, there appears to be a preference for funding a lot of small projects and very few large projects. At the end of the day, we believe that the impact of the "right" technology on the project goals is the important criteria, not the quantity of technologies.

From the AS&E's vantage point, we find our cooperative relationship with TSWG to be very beneficial to both parties. TSGW's personnel appear technically competent, dedicated and hardworking. They also appear to be extremely busy and often juggle multiple projects. The issues that we have brought to your attention today would be mitigated if they had additional staff. TSWG serves a vital role in helping companies, like ours, to

deploy new technologies. We are looking forward to our new Z Backscatter Van project.

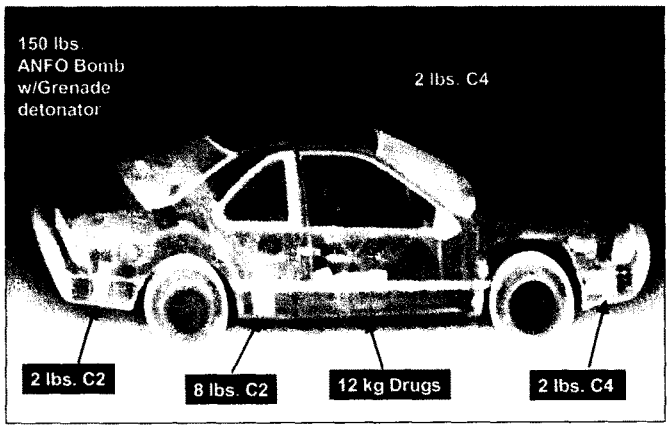
Thank you for your kind attention. I would be pleased to answer any questions that you might have regarding our company and our experience with TSWG.

Figure 1

Z Backscatter Van

Figure 2

Vehicle Explosive Detection with ZBV



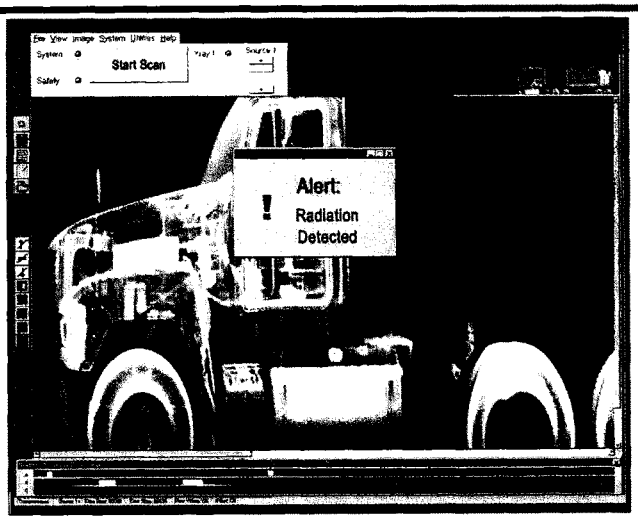
Note: ANFO = Ammonium Nitrate & Fuel Oil

Figure 3

ZBV Scanning Line of Prisoners

Figure 4

Radioactive Threat Detection



Mr. SHAYS. Thank you very much.

Mr. deGrazia.

Mr. DEGRAZIA. Thank you, Mr. Chairman and Mr. Tierney. It is a pleasure to appear before you today. Accompanying me are several of our members, including two who will testify as well. One of them is Larry Borey of HDR from Orlando, FL, and Ken Ducey of Markland Technologies. Also accompanying me are a number of other HSIA representatives, including Bruce Aitken, who is HSIA's president, Yasmin Chirado Chiodini of Intelliorg, who is the executive director of HSIA's Florida chapter and southeast regional center, Hank Close of ITS Federal, and others.

The Homeland Security Industries Association was organized in November 2001, and formally launched about a year ago. Right now, we have about 400 members, ranging from the largest defense contractors, the names of which everyone here would recognize, through mid-sized firms, to startups, and even some incubator companies. Our representatives here reflect this cross-section.

Now, in my oral statement today, I'm going to summarize the views and recommendations of HSIA and then ask that our complete written statement be included in the record of this proceeding. The Association's views represent, of course, a consensus of HSIA and not the opinion or the particular views of any one member. After my presentation, both of the HSIA member firms who were invited by the subcommittee to testify will comment on their own experience with TSWG and generally on their experience with Federal and State procurement in the Homeland Security area.

Now, generally, HSIA wishes to commend Secretary Ridge and the Department of Homeland Security on a successful launch of this massive new department last January. Given that the significant increases in funding for Homeland Security only began to become available last March, we believe that DHS has moved quickly to implement Homeland Security improvements. Now, of course, HSIA members and other companies in the HLS industry, not to mention first responders in those State and local governments, are frankly frustrated with the pace of HLS funding and the early reliance on sole source procurements. We attribute this, however, to the evolutionary pace of developing a new Federal department and the organizational challenges that are understandably associated with such a development.

Now, with respect to TSWG and Homeland Security procurement generally, we have the following recommendations: First, we think very highly of the abbreviated procurement process used by TSWG, and we think it should be followed by Homeland Security procurements generally at the Federal level.

Second, we think that TSWG's separate procurement Web site, www.bids.tswg.gov, should be used as a model for separately posting Federal Homeland Security RFPs, RFIs, and RFQs.

Third, TSWG's dedicated Web site for its procurements should be more clearly linked to the DHS Web site.

Fourth, the Department of Homeland Security should organize a series of seminars around the country to educate firms about TSWG. In our own organization, we held a meeting to discuss our testimony before the subcommittee, and we asked our members how many of them had worked with TSWG and how many of them

were even aware of it. It was only a very small minority, frankly, who had even heard of TSWG let alone worked with them.

Fifth, we believe that greater use should be made of the Small Business Administration's offices around the country to educate firms about TSWG.

Sixth, Congress should appropriate additional funding for TSWG in order to permit it to conduct debriefing meetings with firms who unsuccessfully send equipment or technology to TSWG, and also to implement a debriefing system with respect to unsolicited equipment or technology sent to TSWG. We don't expect that 12,000 people will be talked to, but we do believe that the ones that got close should be given an opportunity to be told what they did wrong and how they could do better the next time.

Seventh, we believe the incidence of Federal and State Homeland Security sole source contracting should decrease. You have a very large group of Homeland Security providers, and we don't believe that it should be concentrated in the hands of one or two companies, even if those companies are members.

Eighth, we believe the administration should consider an inner-agency Homeland Security contracting summit further to the goal of creating a harmonized Homeland Security procurement system.

Ninth, Congress should authorize and the administration should implement a system of security cleared industry advisors from each major area of Homeland Security.

Tenth, the Department of Homeland Security should much more frequently conduct the very successful industry days in order to educate industry regarding DHS goals and plans regarding HLS procurement.

And, finally, the DHS should attempt to collect State and local HLS procurement information and post it on the dedicated HLS Web site recommended above.

Mr. SHAYS. Thank you very much. That is very helpful.

[The prepared statement of Mr. deGrazia follows:]

TESTIMONY OF

BRUCE deGRAZIA

CHAIRMAN

HOMELAND SECURITY INDUSTRIES ASSOCIATION

BEFORE THE

SUBCOMMITTEE ON NATIONAL SECURITY,

EMERGING THREATS AND INTERNATIONAL RELATIONS

OF THE

COMMITTEE ON GOVERNMENT REFORM

U.S. HOUSE OF REPRESENTATIVES

AT ITS HEARING ON

COUNTERTERRORISM TECHNOLOGY: PICKING WINNERS AND LOSERS

SEPTEMBER 29, 2003

TESTIMONY OF BRUCE DEGRAZIA, HSIA

Mr. Chairman, members of the Subcommittee, is a pleasure to appear before you today. Accompanying me are several of our members, including two who will testify as well: Larry Bory of HDR, of Orlando, Florida; and Ken Ducey of Markland Technologies, of Ridgefield, Connecticut. Also accompanying me are a number of other HSIA representatives, including Bruce Aitken, HSIA's President, Yasmin Chirado Chiodini, of Intelliorg, who is the Executive Director of HSIA's Florida Chapter and Southeast Regional Center. The Homeland Security Industries Association was organized in November, 2001, and formally launched over a year ago. We have over 400 members, ranging from multi-billion dollar defense contractors, to mid-sized firms to start-ups and incubator firms. Our panel today reflects this cross section.

In my oral presentation today, I will summarize the views and recommendations of HSIA and ask that our complete written statement be included in the record of this proceeding. The Association's views represent the consensus of HSIA members but not the particular views of any one member. After my presentation, each of the HSIA member firms who have been invited by the Subcommittee to testify will comment on their own experience with the Technical Support Working Group (TSWG) and generally on their experience with federal and state procurement in the homeland security ("HLS") area.

OVERVIEW

Generally, HSIA wishes to commend Secretary Ridge and the Department of Homeland Security

("DHS") on a successful launch of this massive new Department last January. Given that signficant increases in funding for homeland security only began to become available last March, after Congress finally appropriated the FY 2003 funding -- six months into the fiscal year -- we believe that DHS has moved quickly to implement homeland security (HLS) improvements. Of course, HSIA members and other companies in the HLS industry, not to mention First Responders and their state and local governments, are frustrated with the pace of HLS funding and the early reliance on sole source procurements. We attribute this, however, to partisanship in Congress, rather than with any particular failure of DHS. Partisanship has no place in HLS.

With respect to TSWG, and HLS procurement generally, we have the following recommendations:

(a) TSWG's "abbreviated procurement process" is a model for HLS procurements generally at the federal and state levels;

(b) TSWG's separate procurement website, www.bids.tswg.gov, is a model for separately posting federal and state HLS RFPs, RFIs and RFQs;

(c) TSWG's dedicated website for its procurements should be more clearly linked to the DHS website;

(d) DHS should organize a series of seminars around the country educating firms about TSWG;

(d) greater use should be made of the Small Business Administration's offices around the country to educate firms about TSWG;

(e) Congress should appropriate additional funding for TSWG in order to permit it to conduct debriefing meetings with firms who have unsuccessfully sent equipment or technology to TSWG, and also to implement a debriefing system with respect to unsolicited equipment or technology sent to TSWG;

(f) the incidence of federal and state HLS sole source contracting should decrease;

(g) the Administration should consider an inter-agency HLS Contracting Summit, further to the goal of creating a "harmonized" HLS procurement system;

(h) Congress should authorize, and the Administration should implement, a system of "security-cleared" industry advisors from each major area of HLS;

(i) DHS should much more frequently conduct "Industry Days" in order to educate

industry regarding DHS goals and plans regarding HLS procurement; and

(j) DHS should attempt to collect state and local HLS procurement information and post it on the dedicated HLS website recommended above.

DISCUSSION

Since 9/11, America has begun a fundamental transformation from an open society to one that must continually weigh the security of its citizens and corporate assets from terrorist attack. In the immediate aftermath of 9/11, the Administration and the Congress acted with vigor. Unfortunately, partisan politics in the Legislative Branch held up rapid increases in HLS funding, as that Congress did not release FY 2003 funding until nearly half way through the current fiscal year. This meant that the substantial increases in HLS funding that had been anticipated last fall - for First Responders and others - did not begin to be released until less than seven (7) months ago. Since then, the Administration has moved quickly but First Responders and others involved in HLS still have many needs, for which funding has just begun. As a consequence, it is understandable that frustrations have been felt among First Responders throughout the country and among the companies who hope to serve them, including HSIA members.

As I just alluded to, America is an open society. That is the strength of our

democracy and the source of our vulnerability. A year ago, on the first anniversary of 9/11, the Washington Post analyzed America's vulnerability to terrorist attack and gave us an overall grade of "C-" for HLS. Of course, this is unacceptable. America faces a challenge which is likely to take years to accomplish. Therefore, we repeat a call we made in Congressional Staff briefings last January and February for an end to partisanship in HLS.

I now turn to HSIA comments on TSWG and on HLS procurement in general, including our recommendations of HSIA for improving the system.

TSWG is a clearinghouse that identifies, prioritizes and coordinates interagency research and development (R&D) requirements for combating terrorism. Specifically, TSWG develops technologies and equipment to meet the high-priority needs of the United States in combating terrorism, and addresses joint international operational requirements through cooperative R&D with our major allies. It does this through rapid research, development and prototyping user needs.

HSIA believes that TSWG performs a useful function and commends in particular two aspects of TSWG's operations. First, TSWG's "abbreviated procurement process" produces significant time and cost savings to companies who submit technologies or equipment to TSWG, irrespective of whether or not they are successful. This is because, in

this process, the first phase involves merely the presentation of a single Power Point slide, called a "Quad Chart." An example is enclosed as Appendix No. 1. If the single slide is deemed acceptable, then a short paper is required. Only if a company has passed these tests is it required to submit a full proposal. In concept, this is a model for streamlined HLS procurement.

Second, TSWG bids are posted on a separate website, www.bids.tswg.gov. This is an extremely useful tool for dissemination and receipt of data related to active solicitations by TSWG. As discussed below, we believe that a single, separate website for posting HLS RFPs, RFQs and RFIs would greatly help not only firms hoping to do business in the HLS area, but also federal and state officials seeking the best HLS services, technology and equipment. Such a dedicated website is particularly needed in terms of tracking state and local HLS procurement information.

However, we believe that TSWG has hidden its proverbial light under a bushel basket. A recent survey of HSIA members indicated that only about fifteen percent (15%) of them had any familiarity with TSWG. To that end, HSIA proposes consideration of the following:

(a) adjustment of the DHS website to more clearly link to the TSWG website;

(b) organization by DHS of a series of seminars around the country educating HLS firms about TSWG; and

(c) greater use of the network of Small Business Administration offices around the country to educate HLS firms about TSWG.

HSIA has a second area of concern regarding TSWG, which is reflective of a larger concern we have about HLS procurement in general. Namely, and apparently due to lack of resources, TSWG responds to solicited proposals only electronically, with no opportunity for real world feedback about the strengths and weaknesses of a proposal. The only exception to this of which we are aware is if a firm seeks a "debrief" meeting after a bid is rejected. However, at least in some cases, TSWG has taken the position that evaluation degriefs are not appropriate. Debriefs are a right under the FAR once a firm has achieved the "Short List" but not earlier. Moreover, debriefs are extremely helpful, especially to small and mid-sized firms, and they also assist the Government in improving competition in subsequent solicitations. But we are aware of no mechanism at all for a firm to learn about the reasons for TSWG's rejection of an unsolicited technology or equipment that a firm submits to TSWG. TSWG has a point of contact for unsolicited proposals (not noted on its website), but no apparent system for feedback. HLS is an area where technological innovation is important and involving areas not previously addressed

by the Government. Why limit ingenuity in HLS? We recommend that this system be reformed and that TSWG be provided with the funds to staff such a system. In short, TSWG should be supported to the point where it actively encourages unsolicited submission of innovative equipment and technology.

In short, HSIA believes that TSWG is a useful organizational entity and a prototype in some respects for streamlining the overall federal and state HLS procurement process, as discussed below.

Our concerns about the HLS procurement process fall into two categories: (a) federal procurement; and (b) state and local procurement.

With respect to federal HLS procurement by DHS and other federal agencies with related procurements, we believe that the Administration has done a commendable job in successfully launching the new Department in a very short time, as well as in meeting its deadline to federalize airport passenger and baggage screening. In addition, we commend the Department for its recent so-called "Industry Day" related to its upcoming multi-billion dollar solicitation related to "US-Visit," the proposed visitor and immigration control system. DHS went to great and commendable lengths to

outreach to the federal contracting community to share with firms DHS's vision, acquisition plans and updates about this program. There is even a section of the DHS website dedicated to this program.

However, we have some constructive suggestions to help improve this system in the future. First, we believe that the incidence of sole-source contracts, and sole-source delivery orders off the GSA Schedule, should decrease. Sole-source contracting has been understandable as a first step as federal authorities undertook the urgent job of conducting the largest governmental reorganization since the Defense Department was formed in 1947 and the massive job of attempting to rapidly achieve greater HLS. But we believe that the best ideas and technology will result from competitive and transparent bidding.

Second, Secretary Ridge faces an enormous challenge as he attempts to fashion one culture among the 170,000 DHS employees from twenty-two (22) different government agencies, all of whom now work under DHS. To that end, we recommend consideration of an inter-agency HLS Contracting Summit, wherein lessons learned by such established Government Contracting agencies such as the Departments of Defense, Energy and State could be shared, perhaps with input from industry. The goal of such a Summit and followup exercises would be to achieve a "harmonized" procurement and contracting system.

Further, as HSIA has recommended since its founding, we recommend that Congress authorize, and the Administration implement, a system of "security cleared" advisors from industry in each major area of HLS (e.g., airport security, port/maritime security, protection of critical infrastructure, etc. et al). Persons wishing to serve on such Advisory Committees could be invited to submit expressions of interest via Federal Register Notice. Members of each Advisory Committee then could be appointed by the Administration, in consultation with Congress. If fifteen (15) members were appointed to each of, say, 15 Advisory Committees, the DHS would have a set group of advisors from all major fields in HLS, and industry would have an identified network through which it could submit ideas regarding HLS goods, technologies or services. In the international trade field, a system patterned on this model has existed for many decades. Similar industry advisory groups exist in the environmental and transportation areas.

Finally, as to ideas for possible improvement in federal HLS procurement, we urge the DHS to consider two additional steps to achieve transparency and greater interaction with industry: (a) conducting so-called "Industry Days" such as the successful one mentioned above with respect to all major HLS plans and solicitations from DHS and other federal agencies with HLS related procurements; and (b) creating one website for posting all federal and state (see below) HLS procurements, so that industry could avoid having to search through Fed Biz Ops and other such websites.

With respect to state and local contracting for HLS, the concerns expressed above are compounded exponentially. This is because, increasingly, federal HLS funds are sent out into the community through non-federal government or quasi-government units such as state and local government agencies, port authorities, water districts and airport authorities. There are fifty (50) state HLS Offices but these only begin to describe the thousands of offices at the state level with procurement or grant authority. In the state of New Jersey alone, e.g., just in the transportation area, there are six (6) authorities with HLS funding authority. HSIA has endeavored over the past two years to create a system to track state and local RFPs, etc. (see our website at www.hsianet.org) and we e-mail our members virtually daily with new federal and state RFPs. We can attest to the fact that at the state level, HLS funding is no less that a proverbial "maze." So we call on Congress and the Administration to seek to centralize HLS procurement information separate and apart from other federal procurements, including forecastin of planned state procurements and grants.

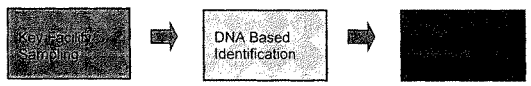
We thank the Subcommitte for the opportunity to appear at this hearing and look forward to further appearances at related hearings in the future. Next, you will hear briefly some comments from a number of HSIA members, including HDR and Markland Technologies. Then, we would be happy to attempt to respond to any questions.

Bruce deGrazia

Broad Agency Announcement: DAAD05-03-T-0024
Mission Area: Chemical, Biological, Radiological And Nuclear Countermeasures (CB) Mission Area
Requirement Number: 1077 / CB-1077-ITSCORP-061303-04
Proposal Title: Identification of Bacterial, Viral and Fungal Category A and B Listed Agents In Facilities Using Real-time Polymerase Chain Reaction.

I.T.S. Corporation
June 13, 2003
Proprietary

IDENTIFICATION OF BACTERIAL, VIRAL AND FUNGAL CATEGORY A AND B LISTED AGENTS IN FACILTIES USING REAL-TIME POLYMERASE CHAIN REACTION.



Operational Capability:

Compile baseline data into a searchable database for the listed agents in key facilities. Identification will be to the species level, quantitative (CFU/m^3) and will encompass time, season, weather, population loading, and geography.

Proposed Technical Approach:
A quantitative Real time Polymerase Chain Reaction assay using manufactured microcards containing the reagents necessary to identify and quantitative aerosolized and surface bacteria, virus's and fungi belonging to the category A and B listed agents. The test system will allow the operator to take surface and air samples over time, season, weather, population loading, and geography. The test system has been constructed using a TaqMan® pre-developed assay using the new microcard platform for the ABI Prism® 7900HT Sequence Detection System for species specific gene identification and quantification. The microcard platform is a single use disposable card that can accommodate eight samples and conduct 48 assays per sample. This system has already been applied for use in monitoring the fungal load associated with human disease within commercial and residential properties in North America and Canada. The tasks that need to be performed is to determine the target sequences for identification of select virus's. We have already determined gene sequences that will be used for the identification of the bacteria and fungi that are present on the select agent list. Molecular probes have to be designed. We have already constructed a Barcode tracking system for every sample taken. This encompasses the time, date, weather conditions, and geography.

Rough Order of Magnitude Cost and Schedule:
Phase 1 and 2 run concurrently for a period of 12 months
Collect samples at key facilities
Collect samples 4 seasons x 8 Locations = $139,840
Travel of Technicians to key sites = $191,360
Design Molecular probes = $34,500
Sample analysis = $1,104,000
Phase 1 and 2 total cost = $1,469,700
Phase 3
Analysis of data = $40,480
Total cost of Phase 1, 2 and 3 = $1,510,180

Deliverables:
• Technical report sampling data sources and compilation of data into a database.
•Technical report describing sampling techniques to replicate the data complied.

Corporate Information:
(business) ITS Corporation, Hank Chase, 300 E. Esplanade Dr Suite 1450 Oxnard CA 93036-1282
Tel: 703-505-4460 Fax: 800-669-4319 E-mail: hankc@itsfed.com
(technical) Dr. Seema R. Patel, Microbiology Laboratory Manager, Engineering and Fire Investigations, Technical Support Services
2218 Northpark Drive, Kingwood, Texas, 77339
Tel: 281-312-3188 Fax: 281-358-5672 E-mail: patels@techss.com

Mr. SHAYS. Mr. Ducey, even though you are first among equals, it is still 5 minutes.

Mr. DUCEY. Thank you.

Mr. SHAYS. Maybe an extra second.

Mr. DUCEY. Chairman Shays, distinguished members of the subcommittee. Good morning. My name is Ken Ducey; I am president of Markland Technologies, a small company dedicated to delivering integrated security solutions to protect our country against the threat of terrorism, located in the great State of Connecticut. I want to thank you for the opportunity to appear before you today to discuss this matter of vital importance.

The U.S. Government and private industry have a long history of working together to find solutions to the most vexing challenges facing this great Nation. It is the entrepreneurial spirit of small, not big, businesses that have led to the technological breakthroughs that have revolutionized our way of living. We all know the stories of entrepreneurs who have overcome impossible obstacles to develop innovative products that have made the United States the great nation it is. This time will be no different. If we can create a system where the entrepreneur and the U.S. Government work together, the two most powerful forces in our country, we will create a synergy unlike anything ever seen before. Even the accomplishments mentioned will pale in comparison to what we can achieve in the area of Homeland Security powered by cutting-edge technology.

The first step for developing a winning strategy is to create a roadmap to success. This roadmap should be developed by a team of experts from the private as well as the public sectors, representing all aspects of the issues. This effort requires the development of a research environment which is driven directly by the field needs of the end user. The innovative capability must be designed from day 1 to fit into a system that meets the needs of the end users and goes into cost effective volume production expeditiously with proper systems for maintenance and training which are so key to the end user success.

To accomplish this goal, DHS needs to develop in TSWG and other organizations the type of mindset and organizational structure that has been utilized very successfully within the DOD. The elements of such an organization are: An ability to invest in basic technologies that can lead to fundamental technical advantages in order to create substantive capabilities. The formation of working groups that would advocate technologies together. The definition of strategic challenges in detail that cross multiple threat spectrum scenarios. Support for the conceptual integrated system solutions which incorporate new capabilities. Testing of such promising capabilities in large-scale proof of concept demonstrations. Working closely within the different branches of DHS and the Office of the Secretary to broker the necessary emotional commitment to the implementation of these particular capabilities.

Namely, it is all about integration, integration at all levels and with all parties involved from end user, vendors, etc. It is this philosophy of system level integration that is employed by our company Markland Technologies when we endeavor to produce integrated solutions for container inspection, border security, air trans-

portation, and military force protection. No single company can solve these problems, and, therefore, industry consortiums will be fostered by TSWG to produce solutions that incorporate substantive capabilities along the best of breed system integration capabilities.

A quick look around the industry will reveal that many disruptive technologies are hidden within small businesses and little known research facilities, while much of the best of breed system integration capabilities are found within large Fortune 500 companies. Therefore, small companies must be brought together with large companies to create the necessary capabilities to reduce the terrorist threat. Neither function by itself will prove adequate to stay ahead of the terrorists or to properly counter their God-given ingenuities.

In closing, I would like to provide one small example of our experiences with the successful research and development of border security and military force protection technology, this technology behind Markland's Vehicle Stopping System. For many years now, the San Ysidro border crossing, the busiest border port of land entry into the United States, has had to cope with attempts at illegal entry by port runners. Undeterred port runners provide illegal entry for immigrants, drugs, illicit materials, weapons, and possibly terrorists into the United States. The INS required a unique solution that would stop the cars but not cause fatalities to the occupants of the vehicle or border agents. Markland Technologies worked with the INS to create, install, and successfully test the Vehicle Stopping System [VSS]. This net can capture a car at speeds in excess of 50 miles per hour with no harm whatsoever to the occupants of the vehicle or border agents. The VSS is now a prime example of a disruptive capability that can greatly help to counter potential threats to the border. Unfortunately, without a systems level implementation into all entry/exit vehicle lanes, the VSS will sit in storage as a prime exam of what happens when you do not bring together all the components of the roadmap to success.

We at Markland Technologies look forward to contributing to the future success of TSWG and the DHS by working collaboratively to develop the best technology solutions for decreasing the terrorist threats currently facing the United States.

Mr. SHAYS. Thank you very much.

[The prepared statement of Mr. Ducey follows:]

Chairman Shays, distinguished members of the Subcommittee:

Good morning. My name is Ken Ducey, I am President of Markland Technologies, a small company dedicated to delivering integrated security solutions to protect our country against the threat of terrorism.

I want to thank you for the opportunity to appear before you today to discuss this matter of vital importance.

The U.S. government and private industry have a long history of working together to find solutions to the most vexing challenges facing this great nation. It is the entrepreneurial spirit of small, not big businesses that have led to the technological breakthroughs that have revolutionized our way of living.

We all know the stories of entrepreneurs who have overcome impossible obstacles to develop innovative products that have made the US the great nation it is. This time will be no different. If we can create a system where the entrepreneur and the US Government work together, the two most powerful forces in our country, we will create a synergy unlike anything

ever seen before. Even the accomplishments mentioned above will pale in comparison to what we can achieve in the area of homeland security powered by cutting-edge technology.

The first step for developing a winning strategy is to create a Roadmap to Success. This roadmap should be developed by a team of experts from the private and public sectors representing all aspects of the issues.

This effort requires the development of a research environment, which is driven directly by the field needs of the end user. The innovative capability must be designed from day one to fit into a system that meets the needs of the end user and goes into cost effective volume production expeditiously--with proper systems for maintenance and training, which are so key to end user success.

To accomplish this goal, DHS needs to develop in TSWG and other organizations the type of mind set and organizational structure that has been utilized very successfully within DARPA. The elements of such an organization are:

- An ability to invest in basic technologies that can lead to fundamental technical advantages in order to create substantive capabilities.
- The formation of working groups that would advocate technologies together
- The definition of strategic challenges in detail across multiple threat spectrum scenarios.
- Support for the conceptual integrated system solutions, which incorporate new capabilities.
- Testing of such promising capabilities in large-scale proof of concept demonstrations.
- Working closely within the different branches of DHS and the Office of the Secretary to broker the necessary emotional commitment to the implementation of these particular capabilities.

Namely, it is all about integration. Integration at all levels, and with, all parties involved from end-user, vendors, etc. It is this philosophy of system level integration that is employed by our company, Markland Technologies, when we endeavor to produce integrated solutions for container inspection, border security, air transportation and military force protection. No single company can solve these problems and therefore industry consortiums must

be fostered by TSWG to produce solutions that incorporate substantive capabilities along with best of breed systems integration capabilities.

A quick look around the industry will reveal that many disruptive technologies are hidden within small businesses and little known research facilities while much of the best of breed systems integration capabilities are found within large Fortune 500 companies. Therefore small companies must be brought together with large companies to create the necessary capabilities to reduce the terrorist threat. Neither function by itself will prove adequate to stay ahead of the terrorists or to properly counter their god given ingenuities.

In closing I would like to provide one small example of our experiences with successful research and development of border security and military force protection technology, this technology being Markland's Vehicle Stopping System, or VSS .

For many years now the San Ysidro border crossing, the busiest ports of land entry into the United States has had to cope with attempts at illegal entry by "port runners." Undeterred "port runners" provide illegal entry for

immigrants, drugs, illicit materials, weapons and possibly terrorists into the United States.

The INS required a unique solution that would stop the cars, but not cause fatalities to the occupants of the vehicle or Border Agents. Markland Technologies worked with the INS to create, install and test the Vehicle Stopping System. This net can capture a car at speeds in excess of 50MPH with no harm whatsoever to the occupants of the vehicle or border agents. The VSS is now a prime example of a disruptive capability that can greatly help to counter potential terrorist threats to the border,

Unfortunately without a systems level implementation into all exit/entry vehicle lanes the VSS will sit in storage as a prime example of what happens when you do not bring together all the components of the Roadmap to Success.

We at Markland Technologies look forward to contributing to the future success of TSWG and the DHS, by working collaboratively to develop the best technology solutions for decreasing the terrorist threats currently facing the United States.

Mr. SHAYS. Mr. Borey.

Mr. BOREY. Thank you, Mr. Chairman, and Mr. Tierney. My name is Lawrence Borey with HDR. We are a national architect engineering firm. We have 80 offices and 3,500 employees around the country, one in White Plains, close to your district, and one in Boston. We also have a wholly owned subsidiary called HDR Security Operations, which is headquartered in Orlando, FL.

My testimony today will be related to facility security rather than individual technologies. We have had many years of experience with many Federal agencies, both military and domestic. We are the principle architects for the renovation of the Pentagon, and many of the technologies developed over previous years by other firms are being incorporated into the improved security of that important building.

Our experience is that planning, vulnerability assessments, policies, and training are often more critical than hardware procurement for facilities security. And too often, first responders, local governments, State governments jump into hardware procurement for security without doing the necessary vulnerability assessments and planning.

We believe that DHS needs a strong central procurement directorate and are concerned that the procurement directorate to date seems to be a subset of the management under secretary. We don't think it's been given enough visibility. Our experience with DHS constituent agencies has been favorable, however, and we look forward to continuing to provide services for architect engineering to the newly created Bureau of Immigration and Customs Enforcement which combine three agencies before that.

The existing procurement processes, however, of the constituent agencies should not be interrupted while the DHS develops its own acquisition regulations. And we also urge that DHS acquisition regulations incorporate the Brooks Act, which is Form Part 36, for architect engineering services which was—the champion for which was Chairman Brooks whose portrait is on the wall there.

We are concerned about the inadequate competition for many new initiatives in DHS, and our experience is that some security initiatives have been sole sourced there the GSA supply schedule. Complex analysis such as vulnerability assessments are too important and too numerous in terms of the number of critical infrastructure components to rely on the capacity and capability of a single firm. One particular example that I will note was the procurement for port security as vulnerability assessments. There are 50 major ports and many hundreds of minor ports in the United States. The Congress very specifically said that the Coast Guard should do a vulnerability assessment on major ports. In order to get up, get going quickly, the Coast Guard chose a single contractor off the supply schedule. It is our information at the latest that the contract is behind schedule for meeting the vulnerability assessments in all those 50 ports.

We've also submitted a preliminary proposal for a national backup 911 system to the Office of Homeland Security. We received little encouragement from OHS, so we have not further developed it.

I would be pleased to answer any questions, and I am happy to submit this testimony.

Mr. SHAYS. Thank you.

[The prepared statement of Mr. Borey follows:]

STATEMENT OF MR. LAURENCE D. BORY
VICE PRESIDENT, FEDERAL GOVERNMENT RELATIONS
HDR

BEFORE THE NATIONAL SECURITY, EMERGING THREATS, INTERNATIONAL RELATIONS SUBCOMMITTEE OF THE COMMITTEE ON GOVERNMENT REFORM

SEPTEMBER 29, 2003

Mr. Chairman, members of the subcommittee, my name is Laurence Bory, Vice President of Federal Government Relations of HDR, a national architectural and engineering firm with more than 3500 employees in eighty offices. HDR also has a wholly owned subsidiary, HDR Security Operations, headquartered in Orlando, Florida. I am pleased to testify today on improving the procurement of the Department of Homeland Security.

HDR has substantial experience providing services of many kinds to a broad range of federal agencies. We have more than 30 years of experience working with contracting officers in the US Army Corps of Engineers, US Air Force and other Defense agencies, US Department of Transportation, US Department of State, US Department of Treasury, US Environmental Protection Agency, US General Services Administration, as well as the former Immigration and Naturalization Service, the Border Patrol, and Customs Service, now part of the DHS (Department of Homeland Security).

I endorse the comments of the Homeland Security Industries Association. HDR was an early member. I would like to make two additional points to the Subcommittee.

DHS needs a strong central procurement directorate. Our experience with DHS constituent agencies has been favorable and we look forward to continuing to provide services to the newly created BICE (Bureau of Immigration and Customs Enforcement). We urge, however, that the existing procurement processes of the constituent agencies not be interrupted while the DHS develops its own acquisition regulations. We also urge that DHS acquisition regulations incorporate the Brooks Act (FAR Part 36) for all A/E services.

Finally, we are concerned that there is inadequate competition for many new initiatives in DHS. Our experience is that some security initiatives have been sole sourced by use of the GSA Supply Schedule. We believe that complex analysis such as vulnerability assessments are too important and too numerous in terms of the number of separate critical infrastructure facilities which must be assessed to rely on the capacity and capability of a single firm.

Thank you for the opportunity to testify. I would be pleased to answer any questions.

Mr. SHAYS. Thank you for all your patience, because this is a large panel. I'm going to first go to Mr. Tierney, and he will ask some questions, and then I have a number of questions I want to ask. Thank you for your testimony.

Mr. TIERNEY. Thank you.

I want to thank all of you. This has been an informative panel and very helpful. I note the heavy Massachusetts influence. And despite the fact that there is one gentleman from Connecticut, I say that. I am so proud that many of the innovative that are coming out, are coming out with some connection to Massachusetts or from Massachusetts. We have some wonderful businesses there.

Mr. SHAYS. We eat off the crumbs off your table, sir.

Mr. TIERNEY. Yes, you do, sir. But you are eating well these days.

I had a few ideas and things I wanted to explore if we had the time. One is, all of you I assume that are in a business developing something, a patent, or somehow otherwise protect the end product. Would that be a fair assumption? I was interested in Mr. Sword's statement that you want to make it open licensing so that others may still take availability. And you are firmly in favor of that from your comments. Is that something you think we should require of all contracts done with government money, or something peculiar to what you are doing?

Mr. SWORD. I want to make sure I'm not misunderstood, sir.

Mr. TIERNEY. Or misquoted.

Mr. SWORD. TSWG is defining a common architecture by which all competitors' robotic platforms and tools will interoperate. This does not mean that we are willing to give away our IP and allow other people to produce the intellectual property that we have developed in-house. But we are on board with their attempt at defining the future of robotics such that multiple vendors can provide equipment that will play well together.

Mr. TIERNEY. Fair enough. Then let me ask, anybody that wants that.

Mr. SHAYS. Would the gentleman just suspend for a minute? Would you move your robotic creature right in front of us so we can see this? That's perfect. Thank you.

Now, tell us what this thing does.

Mr. SWORD. This vehicle is configured as an explosive ordinance disposal robotic tool. The arm you see on it has an 80 inch reach, it has a 300 power zoom camera with illumination on the end of it. At the second joint you will see that there is a gripper. The lift capability on this arm is 15 pounds working in the near vicinity and 5 pounds at full extension. It was designed under contract with U.K. Ministry of defense as a solution to one of their high tech next-generation tools. This is a good example of requirements-driven design.

It is as tall as it is. Why? Because it needs to be able to look into the upper bins of an aircraft. It also has several preset poses on it that assists the operator. This is what I cite as an example of the next generation. It takes some of the burden off of the operators for EOD because they are no longer controlling joint-by-joint control on an arm, but the arm is going to preset poses, and it does what we call resolved motions, so they can actually fly the gripper

or fly the camera and the joints will respond appropriately and they don't have to understand what each joint angle is going to be. The technology has finally caught up with science fiction, and it allows us to off-load the operator to be able to more effectively accomplish the job.

Mr. SHAYS. Thank you very much.

Thank you. Mr. Tierney.

Mr. TIERNEY. And do you get paid to play with that?

Mr. SWORD. I get paid for a lot more than that.

Mr. TIERNEY. I'm sure you do.

My question, then, for those of you who want to answer this, is, what, if anything, is the appropriate thing for the funding and to the government to then ask back from the companies that receive that funding when they have a successful commercial product?

Mr. SWORD. I would like to answer that, sir. In this case, the TSWG funding is letting us take this particular technology from an integrated payload that only functions on our chassis and wrap the TSWG common architecture around it so that it can be provided to the other vendors and can be purchased by bomb squads to use on existing chassis that they already have. That way, I'm not forcing them to buy a complete system from me, but through TSWG funding, I create this common architecture interface on this arm and then make it available to my competitors to augment the existing equipment that the bomb squads have already invested dollars into.

Mr. TIERNEY. Does anybody else care to answer that?

Mr. SAWICKI. A good example of how this process works I think was in the development of these clothing systems. When we had the first award from TSWG, there was no standard in place for first responder protective clothing for these particular end users. And through the research that was done through TSWG and funding that was provided by our corporation and other firms, we were able to provide the National Fire Protection Association in Boston a template of the testing they required to establish the national standard for these kinds of piece of equipment. So we would not be very happy to give up intellectual property to anybody else. We felt that the synergism that came from the government and various agencies within the government and various private companies working together allowed us to have a national standard that is now in place that, as he said, is sort of a common architecture for everybody to do procurements to. I think that's very useful.

Mr. TIERNEY. Mr. deGrazia.

Mr. DEGRAZIA. Yes. Now, typically, the government shares with the developer the intellectual property of something that is developed under a government contract. But the government cannot itself then do anything with that property, can't give it to a third party, for a certain number of years. So there is a system like that in place as we speak.

Mr. SHAYS. If the gentleman would just suspend a second. What good does it do to have the property rights if you can't use them? In other words, it doesn't make sense to me.

Mr. DEGRAZIA. Well, the government does get an opportunity to use it; it just does not get an opportunity to use it right away and set up a third party in competition with the original developer. It

can do it after a period of time, after the original developer has had an opportunity to use it himself.

Mr. TIERNEY. And I think somebody mentioned on the earlier panel that, should you go out of business or something of that nature, the government has then retained the rights to then proceed.

Mr. DEGRAZIA. Yes.

Mr. TIERNEY. Thank you.

Mr. BOREY. There is one other aspect to this that needs to be taken into account. Sometimes the technology we develop needs to be secure so that it can't be misused, either in another facility where it wouldn't function as well or by a way of disarming the technology. And particularly, entrance security or physical security, we designed the standards for the U.S. Bureau of Prisons to develop Federal prisons. And these were modular systems that could be used in a variety of places. Obviously, they are used in different temperatures, different humidities, so there were ranges of usability that had to be developed into them. And, of course, we also didn't want them to—the technology to get out so that they couldn't be used for people to enter or get out without proper permission.

Mr. TIERNEY. Rightfully so.

Mr. Sawicki, you talked about some barriers to that. And one thing that you mentioned was there were people, I thought you said there were people that were purchasing your product, end users, or products—competitive products that weren't up to the standard of your product. And you thought that should be corrected in some way that we are not now doing it.

Mr. SAWICKI. Yes, sir.

Mr. TIERNEY. Would you expand on that a little bit for me.

Mr. SAWICKI. Yes. I think when the Congress has appropriated funds, there has been guidance given to the States as they go buy equipment. They say, you should meet national standards with your claim. Let's just look, for example, at a suit like that. The critical interfaces of the suit are around the mask and at the cuffs and the closures. And if you go out right now to one of your departments up there and you see somebody with duct tape stuck on different places, what they are attempting to do is bridge the gap or interfaces between these pieces of equipment.

Now, if you were to go in with a sprayer—and the national fire protection association test specifies a spray test—none of those duct taped gaps will pass, reliably pass a spray test, whereas these systems, since they were designed together as a system, will. And you can see, if you are out in the field, if somebody sprays some noxious toxic technical and you don't want dripping down your chin down—well, you can see where it ends up—or in your cuff the same way, then you have to grab somebody.

Mr. TIERNEY. So communities are choosing to buy something that is substandard?

Mr. SAWICKI. Well, I think they are not educated as to the standard right now. And because the funding is sort of broad, you know, just go buy what you want, basically.

Mr. TIERNEY. Excuse me. You are telling me that our funding is so broad. I mean, I've seen some of these things, and they don't seem as broad, but I would like to know if they are, that the fund-

ing might say, here is some Federal money, go buy a product. We don't say, go buy a product that is up to such and such standards or better?

Mr. SAWICKI. Well, when I sat on the interagency board, we were trying to transition to the next level, once the standard was in place, to require people to buy to a standard. And that's happened over the last couple of years. And I think as—I just urge you, as the funding catches up in the next cycle, to follow the interagency board's recommendations, which are to purchase to recognized standards.

Mr. TIERNEY. OK.

You also mentioned, Mr. Sawicki, while I have you, that you had a project going; you had the picture up there for the burn situation.

Mr. SAWICKI. Yes, sir.

Mr. TIERNEY. And that was serving a particular need that had been identified to you that was, I assume, fairly pressing if it made it all the way through the process to be funded. But then you said it was stopped for lack of funding.

Mr. SAWICKI. Yes, sir.

Mr. TIERNEY. What happened?

Mr. SAWICKI. We went through a 1-year development phase in which we met all our milestones, and we believed we had a design that would have met all the requirements. It just wasn't funded past that. And so we don't have the capability in this country right now, in my opinion, to respond to any kind of an agricultural outbreak.

Mr. TIERNEY. Was there any communication to you as to why that wasn't funded, why they didn't choose to move forward on it? Was there a competitor coming up with an alternative?

Mr. SAWICKI. No, sir. TSWG actually worked very aggressively with us trying to secure additional funding to try to get a prototype made. We actually went even up to Canada trying to get some money from Canada. And I have to commend the TSWG people especially for really working with us on that. My understanding was there just wasn't a sufficient budget.

Mr. TIERNEY. I guess I'm interrupting you, I'm sorry. But, Mr. Chairman, it would seem to me that TSWG would be the one to make the decision what the priorities are. It goes back to my question of the earlier panel: If you have made a decision that this is a priority, why do you stop? Obviously, there are other things being done. And if this is in the pipeline, you don't stop, you get it done, unless the price is so far out of control it just doesn't strike a balance there and you no longer can meet that criteria. We will have to look into that. I am just struck by that.

Mr. SHAYS. I'm trying to nail down a few things; and Mr. Tierney was getting to it, so I was happy he was asking these questions.

I want to understand, first off, should I view you as scientists creating a product or as entrepreneurs developing a product? How do you each view yourself? And let's go down Dr. Patel. Maybe both.

Dr. PATEL. I consider myself both scientist and entrepreneur.

Mr. SHAYS. I'm going to come right back to you.

Mr. SAWICKI. I would answer yes to both of those.

Mr. SWORD. I believe that's the correct statement, both.

Mr. MASTRONARDI. I would say ditto.

Mr. DEGRAZIA. And I would say that our members are from both areas and consider themselves both.

Mr. DUCEY. Entrepreneurial.

Mr. BOREY. We are both. We have scientists, engineers, technicians.

Mr. SHAYS. But among yourself, I'm just trying to understand.

Mr. BOREY. Personally, I represent the company; so I am neither a scientist nor an entrepreneur.

Mr. SHAYS. Fair enough. When you develop an idea, my first reaction would be, there is a market for this idea so why do I need the government? I can develop this product, and I can make money off of it because there is a market. Am I assuming there isn't a market? Or do I assume that you are so small that you don't have the capabilities? Walk me through why you need the government. And I'd just as soon go right up the line here. In fact, what I am going to do is I'm going to go every other one so we don't have to keep passing the mic while we are waiting. So I'll go to you.

Dr. PATEL. When we get good ideas, the risk of developing entirely new product is so high that small companies cannot afford it. So we often go to the government.

Mr. SHAYS. I see all nodding your head. If you have something that you would just add to it.

Mr. Sword.

Mr. SWORD. As I mentioned in my statement, Mr. Chairman, the target market really doesn't support large investments in revolutionary technology. So it is the infusion of the money from the U.S. Government that helps make the breakthroughs occur. The market itself just isn't going to allow me to sell enough of these robots to ever pay for the research and development.

Mr. SHAYS. In your case, I can see that. But can't you price it in a way that gives you a return? Or even then, it's still not going to?

Mr. SWORD. We are attacking other markets that offer more lucrative return on the investment, and the technologies can cross those boundaries. But to specifically develop a tool to dispose of bombs is such a small market that I don't think the technologies would ever exist without some push.

Mr. SHAYS. Mr. Ducey.

Mr. DUCEY. Well, our organization has a number of members that are very large; they are in the billion-plus dollar range. And those have no problems developing their technology and getting it ready for the marketplace. They have very large R&D departments. But when you get down to the mid size and the small companies that make up a large percentage of our group, they simply cannot afford to put in all of the funds necessary to develop—not even something as sophisticated as this, but something perhaps a little less sophisticated. And yet the need is still there. And that's why they look to the government.

Mr. BOREY. The Federal Government is just one of a number of clients that we have to upgrade security operations. If you will notice from page 4 of our written statement, we also provide these services to health care facilities, to universities, museums, and private enterprise, including the railroads.

Mr. SHAYS. But you didn't really speak to the government funding technology. You were speaking about government contracting, which is, do you want to share anything as it relates to technology as it relates to your area?

Mr. BOREY. Well, we do have some areas that the government funds some of the technology that we use in installing the security systems in the facilities. But generally that's not our business.

Mr. SHAYS. Mr. Sawicki.

Mr. SAWICKI. I would like to give you an example—maybe that's an unfair thing to do—but from my past life. I used to work at Arthur D. Little in Cambridge in technology development. And at one time there was a government contract area that was very aggressive looking at nuclear flash protection. In other words, the magic sunglass that would stop a nuclear flash. And we went out to look to optics people.

Mr. SHAYS. Let me understand why that's necessary. In other words, someone could be blinded?

Mr. SAWICKI. Yes, sir.

Mr. SHAYS. OK.

Mr. Sawicki. In other words, the nuclear flash could be so bright and so fast that it would blind particularly a pilot, they were particularly interested in pilots. We went out to optics manufacturers, and they said, well, we're really better off from a market perspective developing sunglasses for surfers because we get a much higher return on investment. There really aren't that many nuclear flash requirement sunglasses out there, and we are just not interested in working with you. Now, we went even trying to fund these people with some seed money to get going, and there still was very little interest in going after that. So we had to go back and find small specialty companies to provide funding, directed funding.

And I think you see the same thing in all these areas, that even if the market seems very clear, those of us in the business there, when we go to our investors, our board and they come in and say, OK, what are you going to invest in this year? And I say, well, our return in investment 3 years out is going to be a 7 percent yield; but we could open a fast food restaurant here in Germantown, Md, which is rapidly growing, and make 30 percent. They are going to tell us to get into the restaurant business.

So the technology business is just different from others.

Mr. SHAYS. Thank you.

Mr. MASTRONARDI. Yes, I think I pretty much echo what everybody else has said. For us, we look at two markets. One is obviously if there is a return on the investment, and we look at markets and determine whether or not a product that we develop with our own money will have a reasonable return. But very often we're also problem solvers. In the case of our Z Backscatter Van, we have been asked by the Army to come up with a variant on that technology that they can deploy in Iraq. Now, we don't normally have to develop technology that can handle 135 degrees Fahrenheit temperatures during the day, withstand dust storms, fit on to C–130 aircraft, be operated remotely from up to 1½ kilometers away.

These kinds of things, we look to the government because the return on that investment for developing that kind of capability is just not there. And we really think that's—if we can use some of

the government money to support that part of it, then we have a good marriage of good products.

Mr. SHAYS. Thank you.

Mr. DUCEY. It's all who the customer is. I mean, in most of our products they do have commercial applications, but those commercial applications are multiple years out. In the meantime, a lot of things have to be funded to create those applications, and typically the government is the first customer for these new technologies.

Just going back to your example with the housewife, for example. If she does have a solution to a problem that she is aware of——

Mr. SHAYS. I said homemaker.

Mr. DUCEY. I'm sorry. Homemaker. If she is a homemaker and has a technology that she believes can solve a problem, I doubt in most cases that she would have the resources to take that product, develop it into a prototype, test it, etc., to get it through. That's where the government can come in and help. We do a lot of business with a lot of end users at the borders of the country, etc., that also have these amazing ideas, but they have to have a facility in order to get them prototypes developed, etc.

Mr. SHAYS. I have a confession. At this hearing, I said homemaker. The first time I used that story I said housewife and——

Mr. DUCEY. I was there, too.

Mr. SHAYS. And I was corrected quickly. And rightfully so.

Mr. Patel—Dr. Patel, I'm sorry. Your cards that you developed, tell me first who the market was for these.

Dr. PATEL. I'm sorry?

Mr. SHAYS. Who is the market for these? Who is the potential buyer?

Dr. PATEL. There is no buyer other than the first responder or the government.

Mr. SHAYS. In many places this would potentially be folks at Customs?

Dr. PATEL. Yes. It would be mainly the first responder, police, firefighters, who in case of dirty bomb explosives, they have to respond first.

Mr. SHAYS. So that would be local, potentially State and Federal?

Dr. PATEL. Pretty much local——

Mr. SHAYS. A pretty wide market.

Dr. PATEL. Correct.

Mr. SHAYS. And let me be clear. You developed this with funding. How much funding did you receive?

Dr. PATEL. First it was funded by the Navy. They were the first to come out with SBIR phase one and two, which is about three quarters of a million dollars.

Mr. SHAYS. Of a million?

Dr. PATEL. Yes. And then there was some problem with developing darker color at lower temperature and lighter color at higher temperature.

Mr. SHAYS. You had to keep perfecting it?

Dr. PATEL. And that's right. And so we solved some of those problems.

Mr. SHAYS. Is this ready to go in operation?

Dr. PATEL. It is almost ready. In that form, yes, it is ready to go in operation.

Mr. SHAYS. And in the process of doing research, the government is assessing its value?

Dr. PATEL. Yes. That's where we are. The Navy is evaluating, so is TSWG.

Mr. SHAYS. In other words, at one point you are developing the product. The next thing, though, the government is trying to see if it meets its standards. Is that—and this was not done at the request of the Federal Government. You did it; you basically came to the government.

Dr. PATEL. No. The original proposal was solicited by the Navy. That they were looking for an instrument type to distribute in case of nuclear explosion.

Mr. SHAYS. OK.

Dr. PATEL. And then TSWG saw that this could be used by first responders in case of a dirty bomb.

Mr. SHAYS. Right.

Dr. PATEL. The Navy and our government must have foreseen that could be such a need. So the Navy had solicited the proposal.

Mr. SHAYS. But the government hasn't bought this yet; they just helped you fund it?

Dr. PATEL. TSWG has bought 6,000 of them.

Mr. SHAYS. OK. How do you decide ultimately—this seems a little bit on the side, but it is related. How does the government decide what they are going to pay you? And how do you decide whether you are willing to sell? And, by the way, can you refuse to sell afterwards?

Dr. PATEL. The government——

Mr. SHAYS. Let me state all the questions I have. Can the government set the price? First, can you set the price? Can the government set the price? And can you refuse to sell this product once the government helped you develop it?

Dr. PATEL. First thing, I would not refuse for the price or it would not matter, because if the Nation needs it, so it is my pleasure to provide this to the Department.

Mr. SHAYS. No, you are not going to do it for nothing.

Dr. PATEL. No. Of course I would not do it for nothing. I'm in business and would like to make a profit.

Mr. SHAYS. Certainly.

Dr. PATEL. But still, if the government needs it or cities——

Mr. SHAYS. Maybe I'm giving something too hypothetical for you. Maybe I'm suggesting something where you don't think that would happen. You think you will arrive at a price. But maybe one of you could tell me how the government sets a price. Mr. Sword. I mean, Mr. Mastronardi. I'm sorry.

Mr. MASTRONARDI. OK. For our equipment, which is pretty much capital equipment, very often the price is set for the government based on our cost. The government has the right to come in and audit our books and find out how much the cost, and then we're are able to put a modest fee on that and that establishes the price. And we have to use that as the lowest price as always sold to the U.S. Government, and any other commercial price has to be somewhat higher than that anywhere in the world. So that's one way the price can be established if you have not established a commer-

cial price for it. But typically, if it's developed by the government, that's the way the price is developed.

Mr. SHAYS. I don't know if it was in response, Mr. Tierney, Mr. Sword responding to your question or someone else, where you were talking about purchasing a product that didn't work. Who was——

Mr. TIERNEY. Mr. Sawicki.

Mr. SHAYS. Mr. Sawicki. Thank you. When the committee went to Los Alamos at the lab there, they were showing us detection equipment that they said was being sold to the government and no one had ever consulted with them as to how effective it was. And they showed us different products, and some worked better than others and some didn't work well at all, and yet the government was purchasing some of this, which was kind of intriguing to me. Were you suggesting that the government is buying certain products that just simply don't work?

Mr. SAWICKI. Yes.

Mr. SHAYS. OK.

Mr. SAWICKI. I said they work less effectively than others. It depends if you have nothing.

Mr. SHAYS. In other words, if they had done more research, they would have found there was a better product. It just didn't get their attention.

Mr. SAWICKI. Yes.

Mr. SHAYS. What this triggers in my mind is, if TSWG is basically helping you do the research, does it also become a stamp of, a house for goodkeeping stamp of approval? Does it become something that you kind of go to whoever you are selling and saying this has gone through this process and they like it and whatever?

Mr. SAWICKI. Yes. That's a very effective marketing tool.

Mr. SHAYS. Does anybody else want to respond to that? Yes.

Mr. DEGRAZIA. Under TSWG, it's as my colleague next to me has said. Under TSWG, you have a set of cost, and then they—TSWG and you determine what the price is going to be based on the cost. But with regard to SBIR, there is an upper limit for each phase of development, and so those programs are entirely different as to how they fund and set a price for a product.

Mr. SHAYS. Thank you.

Mr. Tierney.

Mr. TIERNEY. Thank you. Just out of curiosity, I would like to know an experience, if any of our witnesses actually submitted a proposal that was not solicited? You have. Would you tell me what the experience was on that in terms of how you were treated and how it was dealt with, as opposed to those that were solicited.

Mr. BOREY. Well, I mentioned to you that one of the things we did as a result of September 11 was develop with a software company a concept, a preliminary proposal for a national 911 backup system which would be located initially in one part of the country, we were considering Offutt Air Force base as one potential place mainly because of the connection by fiberoptics there throughout the country. And we brought it to the Office of Homeland Security.

As a matter of fact, HSIA helped us do that, and we are still in a preliminary proposal face. And we gave them an idea of how it would work, and basically they said, that's nice, we are not able to

respond to that right now. And we've never heard anything back from them on it.

Mr. TIERNEY. So you don't know if it's dead or just in limbo?

Mr. BOREY. Yeah. We have not gone any further to develop the proposal further.

Mr. TIERNEY. Thank you.

Mr. Mastronardi, you talked about spreading the opportunity. I think you mentioned that you thought there were too many small projects being funded and not enough larger being funded. Is that a fair restatement of what you said?

Mr. MASTRONARDI. Yes.

Mr. TIERNEY. What leads you to that conclusion, and what do you think ought to be done about it? How could they do something about that?

Mr. MASTRONARDI. Well, I think that we may not have all the facts to back that up; but it appears that the money, you know, at least initially was spread around a lot to try a number of ideas. You know, in order to really have an impact on some of the mission objectives from the Department of Defense, you really need to focus and execute well throughout the process. And that requires a fair amount of money.

Very often, we find that if we come in with a proposed solution that requires a fair amount of money in the millions of dollars, that it doesn't get funded. And I guess that's been our experience; that if you come in with something less than a million dollars, your chances go up dramatically.

Mr. TIERNEY. Regardless of what the apparent need is? Again, I think this would be another area; if we had some priorities, that would help us to decide whether or not we ought to spend more than a million because it is just that important versus something else.

Mr. MASTRONARDI. And that's fair.

Mr. TIERNEY. And I guess it goes back to that.

There was also some mention by a couple of you. Mr. deGrazia, I think you mentioned it as well as Mr. Mastronardi, and I'm not sure who else, about sole sourcing on that. And I was a little confused, because Mr. Sawicki I think you mentioned you had five contracts on that. I was watching to see if there was a reaction from you, from the aspect of saying that it goes to the same people all the time or not. Does somebody want to talk about that? Maybe you want to talk about a little bit, Mr. Sawicki, Mr. deGrazia, and tell me what we do about that or how it is that you come to the conclusion that you think that it's a problem.

Mr. SAWICKI. I think it's the larger contracts that tend to be sole sourced. The smaller ones seem to be spread out, as you said, among a lot of different firms. But occasionally you will see something in the newspaper you've never even heard about, never had a chance to bid on where, you know, so and so got the $500 million contract to do a nationwide integration of something you say we didn't even see that. You couldn't even get on the team. And I think that's happened quite a bit since September 11. And in a lot of different agencies, whatever process has been used to do that selection, I'm not sure, but it is frustrating.

Mr. TIERNEY. That was a huge issue of contention of this committee when we were dealing with the establishment of Homeland Security Department, and there were many of us—and I think the chairman might have even joined us on that one—who thought that was not a good process to go. There's a provision for that in the Department of Defense contracts. Many of us thought that was not the way to go to any excessive degree in this, and we think that the language did open it up too much. I would assume that we are going to revisit that in future iterations of the legislation. But it was a very conscious thing that was done. There was a large debate about it; there was a wide chasm disagreement amongst people on that. So you are hitting right on what I thought you were talking about at any rate.

Let me just ask one last question, and then, Mr. Chairman, I have to go if you are going to stick around. But Mr. deGrazia, you talked about the need for forums, maybe with the Small Business Administration's participation and others, to educate you industry out there on that. Are there any efforts like that going on now that you are aware of? Have you had contacts with the SBA to start initial discussions on how that might be done? Or is that just an idea that you broached today?

Mr. DEGRAZIA. It's an idea that our members have come up with. Now, the industry days that have been done by the Homeland Security Department are tremendously successful in educating industry about what's out there. But too many of the technologies and too many of the technology companies, particularly the small or mid-sized ones, simply do not know what is out there and do not know what is available. What our members are saying to us is, we need some sort of a forum where we can find out more about what we can do. As I've mentioned in my testimony, we threw out the name of TSWG to a number of our members and got a very small response.

Mr. TIERNEY. The chairman was afraid to even say it.

Mr. SHAYS. That's true.

Mr. TIERNEY. I'm going to have to excuse myself. I want to thank everybody very much. I know that some of you are coming over to my office later, and Mr. McDermott behind me will be happy to accompany you over there. Thank you all very, very much. I appreciate your testimony.

Thank you, Mr. Chairman.

Mr. SHAYS. Thank you very much.

I'm just going to go for 5 minutes. I would like to just note for the record that Mr. McCallum has stayed to hear what you all are saying, and I appreciate that very much. And I think that we have other representatives from the first panel. So we do thank them.

I'm getting a sense that TSWG is kind of like the small businessman's place to go to get support. If you are big league, you don't; you go to DARPA and go elsewhere. I don't know if that's an accurate way to think of it. But you all have kind of mentioned defense, and I get a little nervous because I don't want the Defense Department to rule. In this issue, we are talking about Department of Homeland Security. And I would love to know whether you intend to come back to TSWG in future projects, and whether you intend to come back on anything you have thought about that simply—Mr.

Borey has mentioned, he went on his own accord on some proposal he had.

But you all seem to have responded to proposal rather than to have thought of one yourself and said we want to move forward. So I would like to have a response to that. Are you planning to go back with other items, do you think it's going to be a waste of time if you go on something that hasn't been solicited? And so on?

Dr. PATEL. My personal experience is very professional. I'm dealing with very professional people. And if there is a proposal or concept I have that can be funded by TSWG, I would definitely submit a proposal.

Mr. SHAYS. And you would go there first before going to the Department that might have the direct focus on that innovation?

Dr. PATEL. I have to use my judgment. If there is direct focus and it could be funded by that agency, I would consider both and then have to select one.

Mr. SHAYS. In other words, is TSWG going to be your first place to go or your second place? And that doesn't mean something bad about them, it just means that you may feel that you have a more specific issue that you can get a better response. I'm going to ask it this way. Would you rather go to TSWG first to be turned down, or go to the Department first to be turned down? Which one do you go to first and why? That's really what I'm asking.

Dr. PATEL. If it is related to Homeland Security or so, I would go to TSWG first.

Mr. SHAYS. So, Homeland Security, you'd go to TSWG first. That's how you've kind of sorted that.

Dr. PATEL. Yes, sir.

Mr. DUCEY. I'd go to the Department of Homeland Security first, only because the only way TSWG works is if we find the need first. So if we—there has to be a—much like on the first panel, they said there is a lot of technologies out there; a lot of them are really cool, but a lot of them don't solve a single problem. Where we have found the best luck is if we can talk with either end users or people within the Department of Homeland Security who actually have a specific problem that we can match up to a technology, whether still in development or seen through its fruition, then go backward, and try to figure out how to get the funding for it. At that point in time, we would go to TSWG.

Mr. SHAYS. But it almost is like you have a resume for a job; you want to speak to someone, you just don't want them to see your document. You want to talk to someone, a real person. Maybe I'm reading something more into it. In other words, are you saying you are doing your homework with someone else before you go to TSWG because you've only got one shot there and it's a piece of paper and you want to make sure you kind of set the groundwork?

Mr. DUCEY. Exactly. That's one. And the other is, any technology can be used in multiple areas. So if we can find the real need out there for this technology and then work backward, it's just more effective.

Mr. SHAYS. So you think TSWG has a broader view?

Mr. DUCEY. Yes. If anything, I think they have too broad a view. If that's where—if we talk to Department of Homeland Security and they have a very narrow view on exactly what's needed, then

we can take the technology and match that up, then we can go back to TSWG with that.

Mr. SHAYS. Let me just persist a little more. In the process of going to Homeland Security, you feel kind of you're lobbying first before someone who ultimately is going to—and there's nothing wrong with that, but I'm just trying to see how you work within the system.

Mr. DUCEY. I'm not sure——

Mr. SHAYS. Let me just finish the question. Are you basically saying that you would go to Homeland Security, get to talk to someone who is a real live person; then you would go to TSWG, have a better idea, it has a broader approach; maybe someone will identify a use somewhere else, but you have a person in the room that already knows a little bit about what this is about? Is that part of your approach?

Mr. DUCEY. Exactly. I just don't know—not that it has never happened or couldn't happen, but I'm not sure, just alone, a small company such as ours going to TSWG would get much exposure or recognition, attention. But if we went to TSWG as a small company such as ours and also had some sort of advocate or sponsor within the Department of Homeland Security, that's where it would work the best.

Mr. SHAYS. I saw a few nodding of the heads here. Do you want to speak to that?

Mr. MASTRONARDI. I think that's accurate. If you have a client within the government who has a specific need and you have an idea to fulfill that need, if you had to work it through TSWG, it would have to fit into requirements that got into a broad agency announcement, or even somehow supported as an unsolicited proposal. But if you are going in through broad agency announcement, you are going in against 12,000 other people with one sheet of paper, and sometimes it's much more expeditious to go directly to the people who need the technology the most and can really define exactly what they need. And, you know, that would be the first preference, because if you are a problem solver, that's the quickest way to have a path to solution. But I do believe that TSWG also serves a purpose of trying to collate the general requirements and needs of the Federal Government and putting them into categories that people can respond to to get a broader, you know, technology base for Homeland Security.

Mr. SHAYS. What we are trying to do in part with this hearing is to make sure that the significant number of ideas that are being presented don't get lost. And kind of what I'm hearing is, though, you still need an advocate, or you'd feel a little more comfortable if you have an advocate within TSWG. So, as much as on paper you have this one piece of paper. You'd feel a little better if you got someone who says don't overlook this proposal here.

Mr. MASTRONARDI. I think that is accurate. With 12,000 or so respondents to a broad agency announcement, it is really a pretty daunting problem to sift through all of those and say, OK, based on one sheet of paper this is the technology of choice to fund.

Either it needs an advocate that says this is exactly what we need, or there needs to be, as someone suggested, a couple of other

pages attached to this, that if it sounds even close to being of interest, then there is a little bit more to read initially before it gets——

Mr. SHAYS. But if I now do the inverse, what that suggests to me is if someone doesn't do that we may be losing some really good proposals, because what you seem to be suggesting, and it seems logical to me, one page is a pretty difficult way to present your case. You may lose it. It may be a great idea.

Any other comments on this?

Mr. DEGRAZIA. Yes, Mr. Chairman. One of the issues, the general issues that our members have, is with the whole unsolicited proposal process itself. It is not generally well understood. And I can attest from the other side as well, because I used to use—we used to work for the Defense Department, and we would get unsolicited proposals through all sorts of channels and it was very clear that the people who were submitting them didn't have any idea of how the process worked.

In talking to my members in my current role, some of them do, of course, but not a lot of them know what is going to happen to an unsolicited proposal when it gets somewhere or if it gets somewhere.

Mr. SHAYS. Let's do this. Let's finish up here. Is there any closing comment that any of you would like to make? Anything you think needs to be put on the record?

Mr. DUCEY. Just to add on what you just said. I believe that there needs to be different—there is no way possible, I don't think, that TSWG could ever have the resources to judge all of these different proposals.

And that is where, I think what we are really asking you to do is reach out into other areas, whether it be private industry, whether it be the end users or industry experts, to try to really help them go through that filtering process that you are talking about, whether the ideas are solicited or unsolicited.

Mr. SHAYS. You know, it would be interesting if they had a process to do this. And then they had another group that could take a second look, and maybe this is even something that a GAO report could do, to see if we are losing some good ideas, and have another panel of experts look at it and say, you know what? You should have tried this and then brought that individual or individuals forward to make their proposal and see if we are missing some good ideas.

That would be interesting. Thank you for that suggestion. Any others?

Mr. SAWICKI. I would like to echo the comment before about there is a certain cost range that TSWG seems to be comfortable in funding, typically under a million dollars for an effort.

Mr. SHAYS. That is OK?

Mr. SAWICKI. I think that is OK. But a lot of times will, I won't say dumb down, that is the wrong thing, will condense the scope of a proposal to try to get it under a million dollars for perhaps a technology that really will cost a lot more. And I will just throw one out on the table, because it is an extraordinarily difficult one, which is biodetection and analysis.

It is really hard. Everybody wants a $50 card like the radiation one that will tell you 20 different biological agents.

Mr. SHAYS. You think this is going to cost $50.

Dr. PATEL. No. It is under $10.

Mr. SAWICKI. That one is $10. The one that they always use for bio is 50.

Mr. SHAYS. I think you are asking too much. If I was negotiating with you I would say 5. It is a great idea, but you are going to sell a lot of these. I am sorry.

Mr. SAWICKI. Some of these things are extraordinarily difficult, some of these technology challenges, and a lot of times you will come in and try to narrow your scope to just look at something so you can get into a range that TSWG would want to fund. And you will get a comment back saying, well, you didn't address all of the issues or something like that, and it is really difficult sometimes to try to do that within that budget range.

So I think it almost would be a—part of the Department of Homeland Security or some other agency, a way that would fit into the TSWG process so they can say, well, that is not within our scope, it ought to go somewhere else. So I think the debrief process and some direction back, especially to small companies that was mentioned earlier, would be very useful.

Mr. SHAYS. I agree with that, and I will just repeat what you are saying. I think it would be very helpful to have a debriefing. We have done that with some constituents who have applied for Federal grants, and they haven't gotten it and they wanted to know why. And going through that process has really helped them the next time around.

Any other comment, or should we call it to a close here?

Mr. SWORD. I will try not to drag it out, Mr. Chairman. But if I could make the comment that I think TSWG does, at least in the field that I address, in bomb disposal, surround themselves with experts that understand what the end users need. I think this is very key when they are trying to make their decisions on which technologies to fund and not to fund.

The people I work directly with are really contract workers supporting TSWG, but these guys have survived 23 years of disarming bombs. So they understand very well what the end user wants, would not like, would tolerate, would not tolerate. I think that is something to be said in their favor, and that they do actively go after the talents that understands those fields well. And they are the interactions with the contractors, they are helping guide the direction that the technology is going to head to.

I think that is a very positive thing, that if the Department of Homeland Security is going to try to duplicate the process, they need to do similarly, by surrounding themselves with the experts that understand what the end users need.

Mr. SHAYS. Thank you. Any other comment? Thank you all very, very much. You have been an excellent panel. Thank you. Appreciate you coming to Washington to help us out.

I just want to thank two people on the staff, Joseph McGowan,

who is a detailee from the Department of Labor IG. And we thank him. And Mary Holloway, intern during the summer from Washington and Lee University. And we thank her as well. I would like that part of the record. Thanks for accommodating us.

This hearing is adjourned.

[Whereupon, at 5:05 p.m., the subcommittee was adjourned.]

[Additional information submitted for the hearing record follows:]

3-D MARKETING LLC
16812 EL ZORRO VISTA
MAIL: P.O. BOX 45
RANCHO SANTA FE, CA 92067
TELEPHONE: 858-756-8463
FAX: 858-756-9415

September 24, 2003

Subcommittee on National Security,
Emerging Threats and International Relations
Christopher Shays, Connecticut
Chairman
2157 Rayburn House Office Building
Room B-372
Washington, DC 20515-6143

Re: Subcommittee on National Security, Emerging Threats and International Relations Hearing to be held at 2:00 pm, September 29, 2003 in Room 2154 Rayburn House Office Building, Washington, DC 20515-6143

Congressman Shays:

3-D Marketing LLC, a corporate member of Homeland Security Industries Association, would like to express its support for HSIA's testimony which will be delivered as part of the upcoming subcommittee hearing to be held on September 29, 2003.

It is our fervent hope that this subcommittee does not focus solely on new technology that would benefit national security, but that it would also seriously address already existing technology that could be modified to serve that same end. In this regard, we enclose for your consideration the following:

- 3-D Marketing's letter depicting some of the significant benefits that the United States Coast Guard's NDGPS System would bring to any and all efforts targeted towards national security.
- The USCG's PowerPoint presentation which provides an overview of the value of this NDGPS system to both government and industry.

We respectfully request that both 3-D Marketing's letter and the USCG's PowerPoint presentation be considered as part of this hearing's records.

Sincerely,

Dean Steeves
Director of Marketing

DS/da

Enclosures

3-D MARKETING LLC
16812 EL ZORRO VISTA
MAIL: P.O. BOX 45
RANCHO SANTA FE, CA 92067
TELEPHONE: 858-756-8463
FAX: 858-756-9415

September 23, 2003

Bruce Aitken
President
Homeland Security Industries Association
666 11th Street, N.W., Suite 315
Washington, DC 20001

Bruce:

Attached please find a USCG Powerpoint Presentation that provides an overview of some of the benefits that can be derived by the Homeland Security Department, and others, once Congress completes the funding of the already operational Nationwide Differential GPS System (NDGPS). In a nutshell, the USCG presentation clearly points out that NDGPS could be used by Homeland Security as both a Command Control Communication Intelligence System as well as a Civilian Early Warning System. I think it is important to point out that presently neither one of these two systems is currently in place within the United States. In addition to the above, NDGPS would also bring a significantly increased level of integrity to any nationwide real-time tracking system.

One important capability not addressed by the USCG presentation is the addition of "high accuracy capability" to this network. Once this capability is added, it would allow dual frequency GPS receivers to achieve "decimeter level accuracies". At that point, industries, like the Automotive and Marine, could then install GPS equipment in their vehicles and vessels that would greatly reduce loss of life and damage on our highways and waterways. I am sure that the insurance industry would appreciate this becoming a reality.

In short, when one envisions the multiple benefits and diverse applications that NDGPS can be used for by both government and industry, the costs to complete this project are far less than a drop in the proverbial bucket.

I realize there is much more detail to be addressed for a full comprehension of the overall operations and benefits of this NDGPS System. 3-D Marketing, being a national contractor to the United States Government on thousands of NDGPS based systems, is prepared to put together whatever team would be required to properly present the NDGPS case to either Congress and/or its staffers.

Sincerely,

Dean Steeves
Director of Marketing

DS/da
Attachment

Homeland Security

U.S. COAST GUARD

Reliable Nationwide Security Communications

David B. Wolfe

U.S. Coast Guard Command & Control Engineering Center

The Need

- In an emergency, reliable, nationwide, coordinated communications from a central command post is a <u>necessity</u>
- Including rural and remote areas not covered by:
  - Radio and television
  - Cell phones
  - Police and emergency communications
  - Satellites signals, shadowed by terrain or urban canyons
  - Offshore
- Coordinating multiple systems is difficult and slow

The Solution

- The solution is Nationwide Differential GPS (NDGPS)
- Operated and centrally controlled by the USCG
- Largely based on ex-GWEN sites and equipment
  - GWEN = Ground Wave Emergency Network
  - Air Force system for strategic communications
  - Converted by the USCG for NDGPS communications
- Goal is dual station coverage for the entire U.S.
- Single station coverage is nearly complete now
- End of GPS Selective Availability (SA) provided the bandwidth needed to carry security messages

Potential Users

- Homeland Security and DoD offices and vehicles
- State Governors, State police cars, National Guard
- Mayors, local police cars, and emergency vehicles
- Border patrol vehicles and Coast Guard vessels
- Commercial ships and aircraft
- Amber alert signs
- The press, TV and radio stations, the public
- Because
  - The receiver is small and relatively inexpensive
  - Size of a pack of playing cards plus antenna connection
  - Messages reach the entire country within a minute

Homeland Security

U.S. COAST GUARD

Potential Security Messages

- Threat level raised/lowered to
- Specific threat type and location
- Natural disaster coordination
- Amber alert for a specific area
- Suspect description and alert

Key Advantages

- Nationwide coverage
- Dual use cost sharing (DGPS and communications)
- Central USCG command and control
- Nearly impossible to spoof
- Signal penetrates buildings and flows over hills

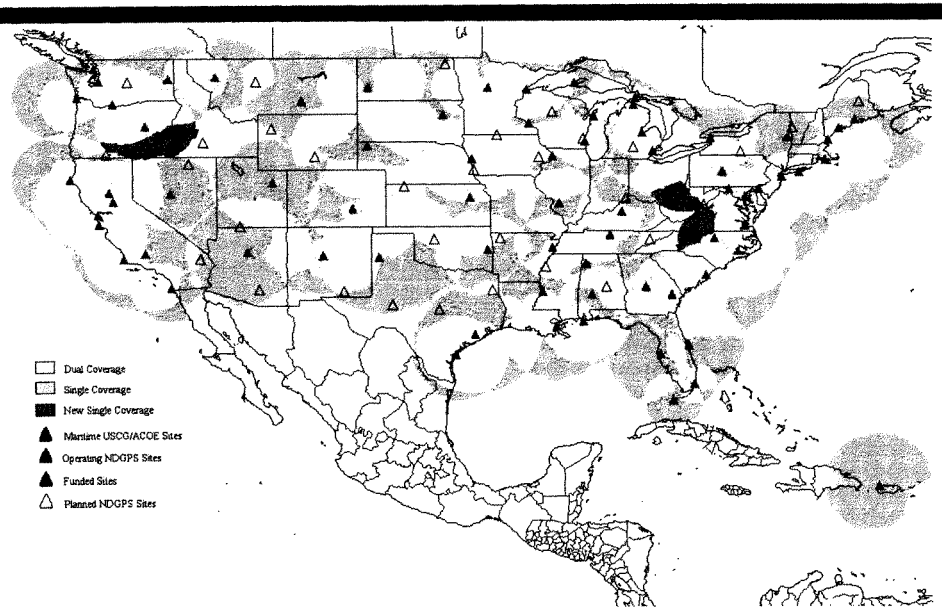
Current and Future Coverage

- The following charts are very conservative
- They do not account for:
  - Skywave coverage, extending the range
  - Redundant message transmissions
  - Conservative ground propagation models
- Communication coverage today is nearly 100%
  - And improving every year

Homeland Security

U.S. COAST GUARD

Coverage Provided with FY03 Funds

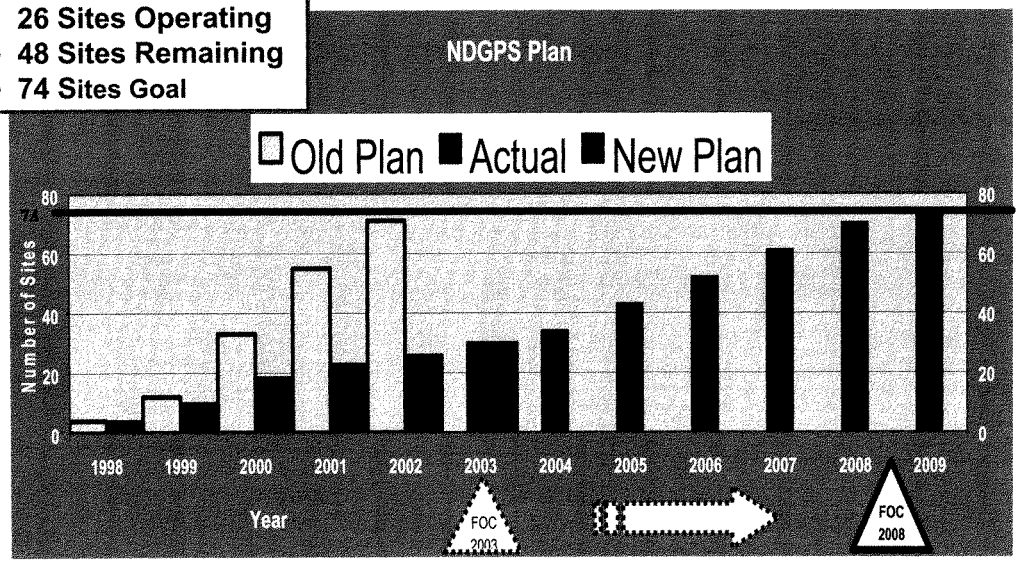


Homeland Security

U.S. COAST GUARD

Progress Toward Dual Coverage

- 26 Sites Operating
- 48 Sites Remaining
- 74 Sites Goal



The Infrastructure Exists

This page should have a drawing showing the system elements, such as the control centers and the land line communication links to each transmitter site.

An adjacent chart can have some words about the infrastructure

Homeland Security

U.S. COAST GUARD

Summary and Conclusions