

DoD's Technical Information Broker

R. Paul Ryan, Defense Technical Information Center Administrator

The Defense Technical Information Center collects and distributes authoritative scientific, research, and engineering information to the defense community. Administrator R. Paul Ryan has overseen operations at DTIC as it has become increasingly digitized and far-reaching, and he has managed the establishment of DTIC as an independent field activity that supports hundreds of Department of Defense Web sites and is now refining new research portals.

In December 2005, Dr. Edward Fishpaw, deputy director of the Defense Acquisition University's David A. Acker Library, interviewed Ryan about the work going on at DTIC to provide DoD with access to the most complete repository of defense-related research and information, and on how DTIC is reaching out to its customers all over the world.

Q In June 2004, DTIC was transferred from the Defense Information Systems Agency and established as a DoD field

activity, aligned with the director, defense research and engineering (DDR&E), in the Office of the Under Secretary of Defense (Acquisition, Technology and Logistics). Two questions: What impact has this realignment had on operations at DTIC? And how has it altered the pace of daily operations or the scope of work conducted at DTIC?

A It has impacted our operations significantly. We have always described our mission as unique within the Department. We are the only organization that broadly collects DoD-wide scientific and technical information; therefore, we frequently considered that we ought to be a stand-alone organization. When it became clear that we were going to transfer back to DDR&E in 2004, I took the opportunity to seek permission to get DTIC established as a field activity. We got all of the i's dotted and t's crossed that we needed to with the Office of the Secretary of Defense, and the decision was made that when we transferred back to DDR&E and the AT&L community and went through all the necessary approval levels, we'd become a field activity.

We are the only organization that broadly collects DoD-wide scientific and technical information.



That was crucial for a couple of reasons. When we were with other organizations, there was always the possibility of conflict between the parent organization's mission and our mission. I fully understand a parent organization's mission superseding ours—if I were the director of that organization, I would probably make the same decision—but it didn't always help DTIC. Getting established as an independent activity removed the issue.

In addition, we were going to work directly for the office that was the primary beneficiary of a central repository for scientific data. Dr. [Ronald] Sega, who was then DDR&E, took the steps to acquire us back. His vision was to have a single place within the Department where somebody who is working in a particular area or on a particular subject can go to find out who's doing what, what we've done in the past, what's going on right now, and what has been written on the subject—as opposed to such information being scattered throughout DoD. The opportunity to put that in place was a major impact on our operations. We were now working with somebody who saw that a crucial part of his job in supporting the secretary of defense was to have an organization like DTIC working for him. We now had a lot of direct and immediate interaction from our prime sponsor, and the pace quickened.

We knew that simply by being established as a field activity, the price of admission had gone up. We were going to be more visible, and we wanted that because we wanted our mission more widely and better known. In that context, Sega's vision for bringing DTIC into the DDR&E fold has really been our mission all along: to collect all of DoD's scientific and technical information into a central, authoritative repository. Everything is here, and people can go to one place and pick it up, whether it is publicly available or classified information. The current DDR&E, John Young, has expressed his support for DTIC's centralization efforts which save taxpayer money.

Q When Sega was DDR&E, he called DTIC the “DoD technical information broker.” How do you see DTIC's role in supporting the work of DDR&E?

A I see our role as DoD's technical information broker as being the repository of all the information produced by DoD or on behalf of DoD. In addition, we reach out to other federal agencies because our interests are the same. We work closely with NASA, the Department of Energy, and other organizations with which we have something in common.

Technical information broker is what DTIC has sought to be: a central activity and a knowledge champion. Our

goal is to get as much information as possible. We want access to journal articles here at DTIC. When people get them from us, they're free; if they have to go out and purchase the information somewhere else, it is an additional cost for the Department—and in the area of funds, no one is anxious to spend extra money.

Q In April 2005, DTIC and DDR&E launched the R&E—Research & Engineering—Portal. Purported to be more powerful than Google™, this portal provides one-stop access to DoD research and engineering information. Who is served by this portal? How has it been received?

A Let me explain the R&E portal. It is actually the mechanism to bring as much information together in one spot as can be done. It's something that has been pushed by DDR&E since we transferred back. It is a four-phase effort.

The first phase was to have a gateway to a number of databases, and we put that up in January 2005. Around April 2005, we completed phase two, which was adding additional databases, search tools, and a news engine, which is a service that goes out to a variety of publications and brings news stories in. In phase three, completed at the end of November 2005, we added our own databases, among them technical reports and research summaries. We developed a retrieval engine called Defense Technology Search, which is an ability to search across several databases simultaneously, while looking at them in different views. The power of this technology search was a very big step.

Phase four has just begun. One of the things we want to provide is complete access to a lot of information with a single sign-on capability, so you don't have to have 16 passwords for 16 systems. You log in, you're vetted, and you're in. We're growing this product right now. The primary people with access to the portal now are DoD customers. There are a couple of other entities here and there that are added, depending on the need. Eventually, the system could have functionality such that no matter who you are, if you have a business relationship with DoD or DTIC, we can provide a registration system and can filter your accessibility and steer you to the information that you are authorized to receive.

We put a lot of information into this portal, and we've worked hard to build the infrastructure. It's DTIC's number one priority and very heavily in demand by DDR&E: a central source with one sign-on to lots of databases for technical information, budgeting information coming out of the budget submissions and as the budget works through the process with Congress, lab demographics, or scientific information.

R. Paul Ryan

Administrator, Defense Technical Information Center

R. Paul Ryan was appointed the administrator of the Defense Technical Information Center in November 2005. DTIC is a DoD field activity and the central source within DoD for acquiring, storing, retrieving, and disseminating scientific and technical information to support the management and conduct of DoD research, development, engineering, and studies programs. DTIC also provides information tools and systems to support Pentagon executives and managers. DTIC hosts, develops, and maintains 150 of DoD's major Web sites.



Ryan was previously the deputy administrator responsible for DTIC daily operations, budget, and personnel, and for developing and implementing strategic business plans and processes. He guided the workforce through numerous robust organizational restructuring events without degradation to customer service and was instrumental in transforming DTIC from a paper-based workflow to an electronic environment. Ryan's leadership skills were exemplified as he transitioned DTIC from a subordinate organizational structure to its establishment as a DoD field activity.

Before his appointment as deputy administrator, Ryan was director, Office of User Services and Marketing. He developed and implemented a marketing program and a product management program, and improved user services for DTIC. He has been a project officer in the Office of Information Science and Technology, and the deputy program manager for the DoD Gateway Information System. Between 1972 and 1975, Ryan held positions for the U.S. Army at Picatinny Arsenal, Dover, N.J. From 1975 to 1984, he held positions at the Ballistic Research Laboratory, Aberdeen Proving Ground, Md., where he provided scientific and technical information on major Army weapons systems and combat technology.

A native of Philadelphia, Pa., Ryan earned his bachelor of science degree in mathematics from Villanova University, and a master of science degree in information science from Drexel University. He is a member of the Beta Phi Mu International Honor Society. He has received the Col. H.H. Zornig Award for outstanding support to the research and development mission of the U.S. Army Ballistic Research Laboratory. He has been awarded the Outstanding Manager Award and the Meritorious Civilian Service Award from the Defense Logistics Agency, the Exceptional Civilian Service Award from the Defense Information Systems Agency, and two Hammer Awards from the National Performance Review.

My main goal is to get people to recognize that strong and robust as that infrastructure may be, it has to have content behind it. You need to fill those databases with relevant information. I'll go back to John Young's strong desire to make a content-rich system. We are going to have the information that is missing now. We have an aggressive network to go out and identify what we should have in the databases and bring it in.

To the second part of your question: Let me give you a glimpse into how well it has been received. When we're demonstrating at a conference, people who see it want to sign up and get access immediately. That was being requested so often that we created an easy registration process that allows them to sign up at the conference. The only requirement is they have to be able to think of a password and then remember it—but it's only one password.

Q *Can you illustrate how DTIC is providing technical information to directly support the warfighter?*

A There are a couple of ways we do that. At the very basic level, there are reports in our collection that the warfighter needs. Something that pops into my head is a situation during the first Gulf War. There were a lot of snakes out in the desert, and warfighters needed to be able to identify them. We provided reports for identifying snakes in the desert directly to the warfighter in the field.

On a broader level, you probably know that we operate information analysis centers under several contracts. These IACs are oriented to a very specific slice of technology that the Department is interested in, and a lot comes out of the IACs that has a direct relationship to supporting the warfighter. As an example, an IAC in manufacturing technology came up with a "mobile parts hospital." That is the capability to manufacture parts for equipment in the field as opposed to coming stateside to obtain them. The Department just established its third mobile parts hospital in Afghanistan a month or two ago. We've also got one in Kuwait and one in Iraq. They have supplied and manufactured over 10,000 parts in theater.

There are many such examples of work the IACs are doing, whether it's the Survivability IAC, the Chem-Bio Defense IAC, the Chemical Propulsion IAC, and so on. Combatant commands request help in a specific area, and the IACs are able to turn around and provide answers to specific questions, often within four to eight hours. Other re-

quests for help require a significant amount of research, but the IACs are superb in addressing these requests. The IAC program is a very important piece of what we do and a very direct response to what needs to be done to support the warfighter.

The third thing we do that directly supports the warfighter is to manage a whole host of Web sites here for the Department. We got into the business of hosting Web sites at the very early stages, and we host about 150 of the

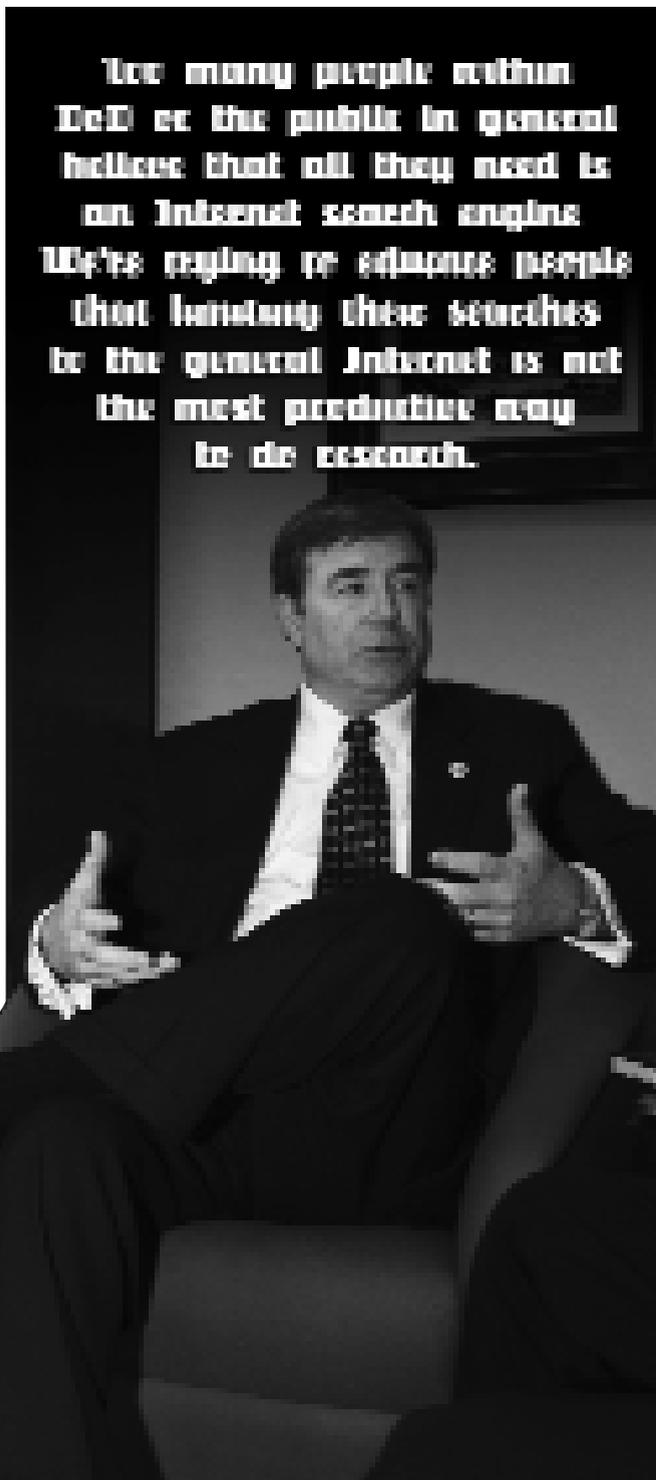
DoD's sites out of DTIC. We're not responsible for the content, of course, but for hosting, security, and everything else. One of the sites is *Defense Link*, and we find a lot of servicemen and women overseas get their news from *Defense Link*. We put the *Defend America* Web site up in the weekend after 9/11, and it was another opportunity for the secretary of defense to get his message out. For a time, we supported the *America Supports You* Web site, which provided an opportunity for citizens to send messages to servicemen and women. The anti-terrorism enterprise portal is another example. The most current and reliable information on anti-terrorism that all the combatant commanders need is in one secure place. When it gets right down to it, even the R&E portal will be directly useful to the warfighter.

Another example is the Iraqi Virtual Science Library. There is a concern to ensure that the Iraqi scientists and engineers have access to information to help rebuild Iraq's infrastructure. They lost all their information sources before and during the war—many libraries and research institutions were decimated. There is an effort under way between the Defense Threat Reduction Agency, DDR&E, DTIC, the Department of State, and the National Academy of Sciences to work with some journal publishers to provide access to a great deal of scientific literature—and I am talking about thousands of journal titles. Iraqi scientists who get vetted as people working to improve the situation in Iraq can come into this virtual library system for data they would otherwise not have, in order to continue their work.

Q *One of DTIC's mandates is to prevent unnecessary or redundant research, thus eliminating the possible waste of taxpayer money and ensuring that researchers are maximizing their productivity. What tools do you have in place to ensure researchers are not overlapping their efforts?*

A There are several ways that we help address that problem. One is to make our collection repository as complete as possible so that when researchers come in looking for information, we're sure they will find it; and if money has been spent on that kind of effort in the past, they will know about it. We do a lot in the area of educating people: conferences, hosting visits to DTIC, outreach by the staff, visits by some of our regional offices, and training opportunities.

There are DoD requirements that say scientists, researchers, and program managers will search the research summary database—our database of ongoing DoD research—to make sure there is no duplication, so it makes sense for these same scientists, researchers, and PMs to look at our technical reports. The independent research and development database is also important; it contains



information coming from DoD's top contractors. That information is proprietary, and we protect it that way—it is a limited database and password-protected. It is a valuable source.

Q *You've been credited for transforming DTIC from a paper-based workflow to an electronic environment. How were those changes implemented? What benefits have accrued since making this transition?*

A I don't want to take personal credit for having done that because it's been a group effort over a long period of time. As we discussed at the beginning of our conversation, more and more information is available, and we needed more efficient ways to handle the volume. Our Electronic Document Management System became operational in November 1994. That was the culmination of an effort that grew out of a DTIC technical project. We went through some feasibility efforts and prototypes, but it blossomed into a large-scale, end-to-end system to take paper documents and transform them into electronic documents. We built a system to create an electronic record of a document as soon as it hits us. From that point on, every DTIC function that adds

value to the document is done electronically. It's been a process that has continued to evolve, and in January 2005, we reached the point where more information was coming to us in electronic form than as hardcopy. We are now more digital than paper.

Digital has a lot of benefits. First of all, there's clarity of color of the original. Also it helps in the preservation of the information. We are now looking at large-scale digitization of microfiche to create electronic documents—and we have a whole collection of microfiche and microform.

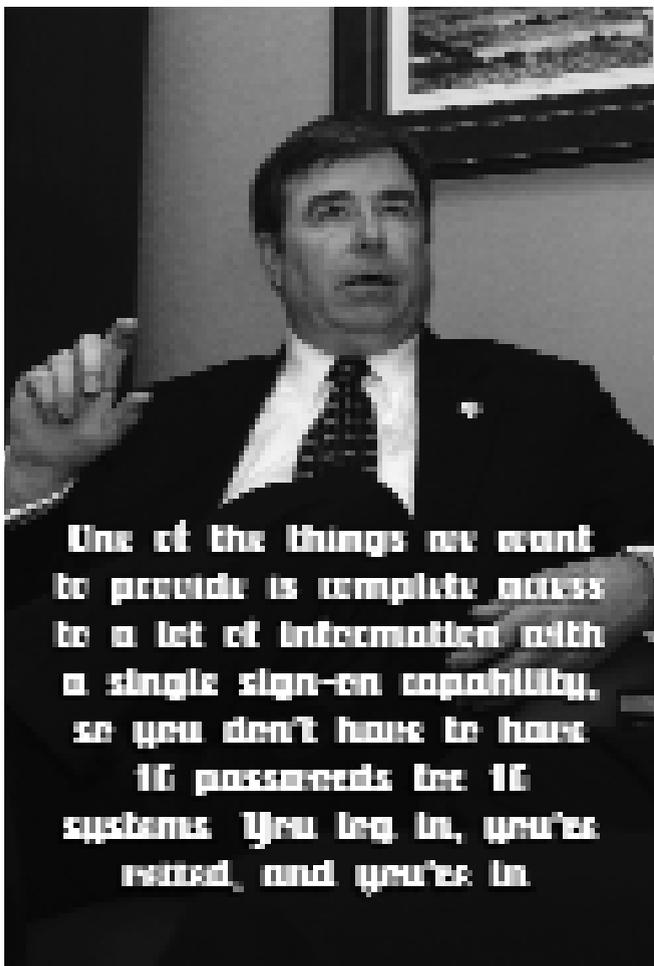
Although we were digitizing microform on an as-needed basis, we found state-of-the-art equipment to speed up the process and we began backfile digitization in April 2005. With a new machine that really accelerates the process for the microfiche, we've been able to digitize a million pages or so between April and October—a significant number for that period of time. We began with what would scan best and then worked our way backwards, moving on to the less-than-top-quality images and so on. We're experimenting to provide the best possible electronic image.

Q *It is a transformation process, this digitization. The librarians appreciate DTIC's use of handles—a persistent identifier or persistent name for a digital object regardless of where and how it is stored. URLs change and disappear, and it's very frustrating to be searching for something online only to find the link is dead or the document isn't there.*

A The handles are another thing that grew out of a DTIC projects requirement, where we looked at new applications and said, "That makes sense." We've been applying handles to our documents for close to a year because lost documents are a big issue.

Q *While the majority of the over 11,000 registered DTIC users are DoD employees, an appreciable percentage are users from organizations contracted to the government and from non-DoD federal agencies, colleges, universities, and research centers. What kind of outreach is done to work with such customers? How do their accounts differ from traditional DoD user accounts?*

A The first thing I'd say is the number is now in excess of 12,000, and it's growing continuously. And those are just the people that need to register with DTIC in order to get to limited or classified information. A good deal of DoD's information is publicly available the day it's created, and a lot of our customers are coming through the public Web



site to find information. The majority of users are from DoD, but contractors account for the second largest group. And they are contributors as well as customers, so we are talking to them constantly and adding registered customers in that category. We find that contractors recognize DTIC as a place that allows them to save money by quickly finding what they are looking for, and obviously cost saving is important to them. It's the same with the universities.

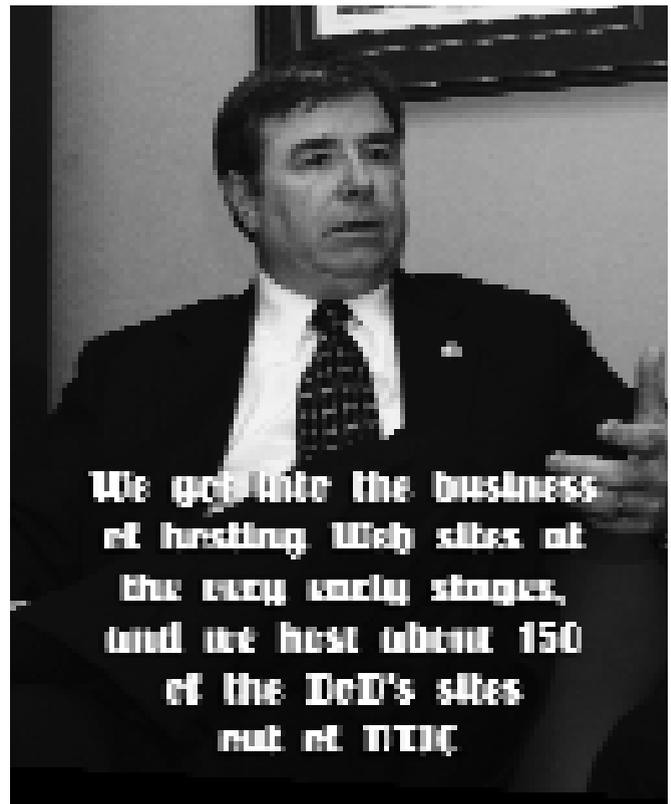
If you have a legitimate business relationship with DoD or DTIC, we'd like you to register so that you can gain access to everything we are capable of providing you. We've got a good marketing program in place to inform people of our resources. We're looking at different avenues to market to get our message out. We've redesigned the first page on our Web site to bring more people to <www.dtic.mil> for what they need. Standing up as a field activity allows us to deliver our message from a more visible position in the Department.

Q *DTIC works to provide the general public with access to DoD scientific and technical research. What types of information are provided to the average citizen? How is DTIC working to publicize this access?*

A The work we do that makes the information from the Department available to the public is essentially a by-product of our work to make that information available to DoD. We recognize DoD and the DoD community as our prime customer base. But we also found that at essentially minimal cost, it's easy to make the data accessible to the public. Through tax dollars, the public certainly helps contribute to the creation and management of the records of research. We don't keep any long-term record of who is looking at the database, but by aggregating user statistics at a higher level, we get a general idea of who our customers are. It turns out that a large number of them are coming from .mil accounts. We don't go out and publicize and put a lot of money into making our information available to the public, but we have taken the easy steps to make it available, and it has gotten a lot of usage on a regular basis.

Q *What you say makes me think of how I can talk to DAU students about using the public search site, and add a link from the Acker Library resource page on the DAU Web site to connect with DTIC.*

A Registering with DTIC is really important and should be pretty painless for your students. About 42 percent of what DoD produces (and that number changes by a couple of percentage points every time you look at it) is avail-



able to the public. But there's another 50 percent that's still unclassified but carries some limitations. You can get to that information without having to go through a secure site, but you must be registered. Fifty percent can be a lot to overlook if you are accessing only the public information. The remaining 8 percent is classified and obviously a bit more difficult to get to. We're trying to make sure that people who need access to the information we provide know there is a side that they're not going to get to if their searching is limited to public information.

Q *You mentioned DTIC's IACs, which help customers locate, analyze, and use scientific and technical information in specialized subject areas. The IACs possess historical, technical, scientific, and related data that are collected on a worldwide basis. Can you describe how the IACs operate? How do they enable customers to obtain the best and most updated information?*

A There are DTIC-managed IACs in very specific areas, as I mentioned earlier: chemical-biological defense, sensors, information assurance, survivability, chemical propulsion, advanced materials, reliability, data and analysis, and weapon systems. DTIC provides a level of funding for the IACs that allows them to operate at a basic level. They have staff and they have the capabilities to collect information worldwide and process the information in their systems. They also collect information at a very deep level in the specific subject area for which each IAC is respon-

sible. We also make sure that information gets pulled back into DTIC.

The IACs are contractor-operated. This is an important feature of the program. The contracts are written so that if somebody in DoD has a need for a particular study or analysis, an IAC can tap the expertise of its larger organization. Battelle, Booz Allen Hamilton, Alion Science, ITT Industries, Georgia Tech Applied Research, Wyle Labs, and Johns Hopkins University are institutions that operate the IACs.

If someone has a question that an IAC can answer in four hours or less, we provide the response at no charge. If it goes beyond four hours, then we work with the requester and try to figure out what it is he or she is looking for—does it need two days' worth of effort to get a technical issue answered, or does it need two months' worth of heavy duty work? There is a whole range of services at differing levels of requirements, and we are able to work with the customer. It's a very flexible program.



The Independent Research and Development database contains over 171,000 descriptions of R&D projects initiated and conducted by defense contractors independent of DoD control and without direct DoD funding. Such information is used to identify contractors with expertise in areas of interest to DoD and to avoid DoD duplication of industry R&D efforts. How are you working to foster relationships between DTIC and industry and further promote this sort of synergy?



The IR&D is one of the three main DTIC databases. We have the technical reports; the research summaries, which are DoD's record of work that is in progress or completed; and IR&D, which is the industry counterpart to that research summary. It is important to the Department to take advantage of the research done by industry. We support the Department's efforts to make use of that database in talking to industry. We have a program manager dedicated to going to industry meetings and conferences, and working with industry to explain the benefits of submitting data, telling them how it is used, helping them submit. The number of IR&D records coming into DTIC has been on the increase ever since our PM has been involved.



Are there other specific areas that you would like to talk about?



There are a couple of things I'd like to say. One of my concerns is that too many people within DoD or the public in general believe that all they need is an Internet search engine to find whatever it is they are looking for. That

may be okay if you're trying to price the camera you're buying your brother-in-law for his birthday. But it's not okay, in my opinion, at the level of what we are trying to do here in the DoD. Those Internet search engines can't get into our databases, for instance. They don't get into anything limited, much less classified. We're trying to educate people that limiting their searches to the general Internet is not the most productive way to do research.

The redesigned DTIC home page links you directly to a search engine. We redesigned it for a couple of reasons. First, it recognizes that the key reason people come to the DTIC Web site is to find information, so we put up a page that allows them to get down to business immediately. They type in the subject and the engine searches all the Web sites that are linked. There are several ways to refine the search—for example, if you want to search only the DTIC scientific and technical database, you can narrow your search in that way. You can also search all DoD-wide Web sites. We've made links to other Internet search engines and resources—for example <www.first.gov> and <www.science.gov>—and we provide a link that allows for a search of about 10 different massive databases simultaneously.

So now we've got a way for people to perform a common search in a broad collection of databases they may not be familiar with. What we're doing is trying to lure them back to recognize that there's more at DTIC than they'd get using any other Internet search engine. The open archives initiative is another way to make more of our information available to be spidered [*a spider is a program that browses the World Wide Web and creates a copy of all pages visited so that a search engine can later index the downloaded pages to provide fast searches*] by Worldcat®, by Google, by Yahoo®, and so on, so if you're looking for something defense-related using an Internet search engine, the record from DTIC will show up—not something that has been pulled and put into an independent database to sell back to DoD. It will be *our* database, *our* record, and there will be a connection back here to DTIC.

We're bringing the DTIC home page more in line with what people are used to seeing on other search engines and giving them a lot of flexibility. There are several links that take you right back to the standard DTIC Web site if you need information on our organization.

The other thing I'd like to say is that DTIC has almost 300 people, all pulling together and working the mission. We worry about the care and well-being of our staff—that's essential. We are a field activity, not huge, but it's amazing some of the important things we do in a kind of behind-the-scenes role.

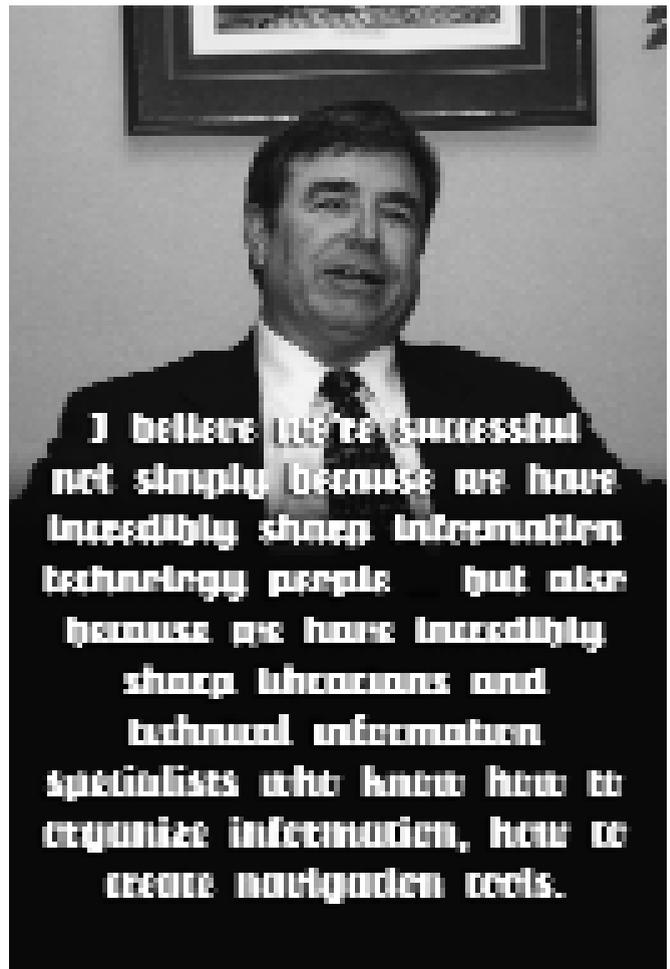
I believe that DTIC has been very responsive to the needs of the department. When the department's leadership

requests a Web site be created quickly, we are able to establish something such as *Defend America*. We put that site up over a weekend. I am very proud of the men and women of DTIC and our support contractors as being very dedicated people. Our satisfaction comes from knowing our behind-the-scenes efforts are noticed. During a stretch of two or three weeks in the summer, the president mentioned the *America Supports You* Web site in a national televised address. At the time, the Web site was hosted and supported at DTIC. Not too long after that, the secretary of defense mentioned the *Defense Link* Web site—again, a Web site we host at DTIC. In the same time period, one of our employees got a Joint Civilian Service Achievement Award signed by Air Force Gen. Richard B. Myers, the then-chairman of the Joint Chiefs of Staff, for the work he had done for J5 (the Directorate for Strategic Plans and Policy, the Joint Staff) in creating a Web site for a multilateral conference. It saved them a lot of resources, which were scarce because of the number of people who were deployed. Although just one employee got the benefit of the award and certainly deserved it, it's important for the organization to know there's something hanging on the wall here at DTIC from the chairman of the Joint Chiefs of Staff. It gives a feeling of general accomplishment and pride.

Q *In an article I was reading recently, I found something of interest: In 2004, DTIC worked on the Web site of the Regional Air Movement Control Center Council (RAMCC), which coordinates the movement of fixed-wing aircraft in support of coalition military, humanitarian, and commercial air operations over airfields in Iraq, Afghanistan, and Pakistan. The site was used quite heavily during the Afghan inauguration ceremony in December 2004. Do you have a story that goes with this?*

A No story beyond the fact that it's typical of the important work we're asked to do. We got into this Web business for the Department very early on, and we are very good at it. I believe we're successful not simply because we have incredibly sharp information technology people—although we do have incredibly sharp IT people—but also because we have incredibly sharp librarians and technical information specialists who know how to organize information, how to create navigation tools.

You asked earlier how we directly support the warfighter. RAMCC is an example. In the summer of 2004, that Web site was used to help guide fixed-wing aircraft in and out of Afghanistan. But it's not only the warfighter that RAMCC supports. It was used for the Afghani presidential inauguration, and it has been used for elections in various cities. We also support the Federal Voting Assistance Program, which provides military personnel overseas and other U.S. citizens abroad information about voting.



Q *From your unique perspective, how can DAU improve or enhance the curriculum to better support DTIC?*

A I think that question ties back to a previous question where we talked about one of the tools we use here to increase the usage and to prevent redundant research—education. I think there is certainly room to work more closely with DAU in finding the appropriate places to insert information about DTIC into the curriculum to enhance students' ability to gather information at that point and be aware of the capabilities of DTIC throughout their careers.

Q *Mr. Ryan, I appreciate your taking time for this interview with Defense AT&L, and I want you to know that in the librarian world, DTIC has an outstanding reputation.*

A Thank you. We're a small organization with a long history, and we've just scratched the surface and hit the highlights today. My main focus is to continue increasing the amount of information we receive and provide—that is increasing the content—and to spread the word much louder about taking advantage of what is available at DTIC.