GEOSPATIAL INTELLIGENCE FORUM

Interview with Dawn Meyerriecks,
Assistant Director of National Intelligence for Acquisition, Technology and Facilities

INTEL TECHNOLOGIST: Developing Great Technology to Address Key Intelligence Challenges

By Harrison Donnelly, Geospatial Intelligence Forum Editor
September 2011

Dawn Meyerriecks is the deputy director of national intelligence for acquisition and technology within the Office of the Director of National Intelligence (ODNI). Meyerriecks has extensive experience in designing, building and fielding intelligence and information technology solutions for the government and private industry. She was formerly the Defense Information Systems Agency (DISA) chief technology officer and the senior vice president for AOL Product Technologies.

The DDNI for A&T is the DNI's senior acquisition executive and science and technology adviser responsible for integrating science and technology across the IC enterprise, and for ensuring excellence in achieving cost, schedule and performance in acquisition. The office also is responsible for generating and developing research and development advances capable of transforming U.S. intelligence, and providing intelligence advantage over future adversaries.

Between 2006 and 2009, when she joined the ODNI, Meyerriecks worked as an independent consultant for government and commercial clients. Previously, she was the senior vice president for AOL Product Technologies, where she was responsible for full life cycle development and integration of all consumer- facing AOL products and services, including the re-launch of aol.com, AOL Instant Messenger and the open client platform.

Prior to AOL, Meyerriecks worked for seven years beginning in 1998 at DISA, where she was the chief technology officer and technical director for the Joint Interoperability and Engineering Organization. Her last assignment was to charter and lead a new Global Information Grid Enterprise Services organization. Meyerriecks worked at the Jet Propulsion Laboratory from 1983 to 1998 as a senior engineer and product manager before her tenure at DISA.

Meyerriecks holds a Bachelor of Science degree in electrical engineering from Carnegie Mellon University with a double major in business and management science, and a Master of Science in computer science from Loyola Marymount University.

Q: How would you describe your mission as Deputy Director of National Intelligence for Acquisition and Technology?

A: It's a fabulous job! What we're trying to do here is to make sure we get great technology to address key intelligence challenges. We're a policy and oversight group, except for IARPA [the Intelligence Advanced Research Projects Activity], so the key is figuring out how to knock down the inhibitors to most efficiently get great technology out to our mission operators and analysts. If you're really good at your job, you challenge the status quo in productive ways. So we try to challenge process stuff, CONOPS and technical approaches when they don't make sense. Then we try to bring together people we think are able to complement each other and really kick it to the next level in terms of how the technology supports mission.

Q: What is your vision of the role of geospatial technology in the overall world of intelligence technology, and the role of your office in that field?

A: GEOINT is foundational to every operation or mission that takes place. That's much broader than just the intelligence community, but also departments of defense and homeland security. GEOINT is the underpinning and the basis for information sharing, as well as the framework. Part of what we're seeing in the revolution in digital handhelds, such as iPhone, Android and so on, is a geo-reference framework as the basis for everything. It's incredibly important in terms of the intelligence community's mission, but it's much broader than the IC. We supply the U.S. government, and also help with the commercial industry that supplies it worldwide. I think that's pretty phenomenal.

In terms of our office's role, we concentrate on the intelligence challenges, and I'm big on looking at technology as a continuum. So we try to look at what we should be doing from a GEOINT perspective from cradle to grave. We try to sort through where we should be making key R&D investments, what we should be doing in terms of mission architecture to support development and production of GEOINT and foundational data, and all of the framework that enables intelligence integration of all the other INTs. Then we pair that with an investment strategy. When the budgets are looking like they do now, we have to make prioritization decisions. That's all part and parcel to trying to catalyze good conversations so that as an IC, we're putting our dollars where they need to go as effectively as possible.

Also, I'd say that Letitia A. Long, director of the National Geospatial-Intelligence Agency, is right when she talks about putting the power of GEOINT in your hands. That's a great vision that Ms. Long has articulated. If that's what the functional manager says we ought to be doing, then that's what my office is about as well. In fact, we have an NGA person here on assignment to help make sure we steer in that direction, and our chief of procurement is also from NGA. We understand the value of GEOINT to the community, and we've put our money where our mouth is. NGA does the same thing, and it's a great partnership.

Q: One of the overriding issues facing the GEOINT and ISR communities concerns the transmission, storage and dissemination to the field of the huge and growing volumes of imagery and other data. Where are you looking for solutions to these problems?

A: We've got this problem across the board, and it's not unique to the intelligence community, but across commercial industry as well. We see lots of innovation being led by industry. One of the lessons I learned from AOL is that you can actually deliver innovation without asking for additional dollars. You have to be smarter about how you manage your infrastructure. Technologically speaking, cloud computing and all the technologies that come with that are big players for us. Network and content staging innovations, peer to peer, and proxy caching are among the things that are happening. On analytics, industry has done an amazing job with consumption metrics, which plays right into what we're trying to do in terms of make sense of data and how we stage data smartly across the globe. It's information assurance writ large, which to me is more than just making sure that your Maginot Line is high enough. It's really talking about right data, right place, right time. Industry is paying a lot of attention here, particularly as people get more sophisticated in coming after our infrastructure. All of that helps in terms of what we're doing, and we're going to leverage that as much as we can.

Q: During a workshop at last year's GEOINT Symposium, you addressed technology delivery as a continuum, and the need to find better ways to bring scientists and technologists together with procurement and acquisition. Can you elaborate on that?

A: Unfortunately, we have created stovepipes in the way we think about technical lifecycles, so that R&D is a separate animal from acquisition and procurement. Then you throw it over to operations and let them deal with it. The money flows that way, and we reinforce that across the board with oversight.

One of the interesting things about the intelligence community is that we're smaller and more intimate than the Department of Defense. We can do experiments into how you do tech-insertion into large-item acquisitions.

One simple thing we haven't exercised in the past is an advanced concept technology demonstration [ACTD]. Why is that? Why would we slam something into an MSA [major system acquisition] designation, when it's really a tech demonstrator or field experiment? I think we have all the room we need in current policy. Nothing in current policy says you have to be stupid. But we want to come up with decision trees and flows that say—OK, given that the TRL [technology readiness level] of the technology is at three [DoD designation for the beginning of R&D], why would you target that for an MSA that has to be date- and budgetcertain? Why would you make that the critical path in an MSA? What forces us there? Nothing does, because DoD actually already has the proven path of an ACTD to prove the technology is or is not going to work. We don't want to target it for the next launch of whatever this capability is. Concretely, we're trying to put together implementation guidance that talks to when something is an ACTD

vs. a procurement vs. an acquisition vs. a post-acquisition activity, and lay that out without creating a 5,000-page deskbook. We need something that's useable, lightweight and makes sense to technologists without being overly constraining.

I also think that we're doing things like trying to articulate what the right targets are. I frequently point out that the U.S. Internet today carries 8 x 10 to the 18th bytes per month. In 2015, that will be 10 to the 21st, and in 2020 10 to the 24th, if you take current projections. That means that, from an R&D perspective, if we're going to try to do something for 2015, which is only four years from now, and we're looking at a three ordersof- magnitude data rate increase, we better have things in the lab today that are going to deal with those kinds of volumes. If we want to shoot something into space that's going to deal with those volumes, then we better be looking at something that has six orders of magnitude over what we can do today. We're trying to ask what the future is going to look like, not trying to project product technologies, because 10 years out for IT is nearly impossible. But you can have a concept for dealing with the demand function.

This is part of our asking the hard questions and challenging the status quo. Those kinds of questions need collaborative answers between scientists, engineers and procurement/ acquisition experts. You have to bring the right people together, to argue about whether you're even asking the right question, and also to figure out if we don't have an answer, how should we think about and address it from a whole-of-technology perspective. And because of the budget situation we're in, to fund it, you have to bring in the operations people, because what we want to do is convert computer administrators into intelligence analysts.

At the end of the day, you have to make all of your cost curves go flat in this kind of budget, even though your demand function is still a geometric progression. That ties the whole life cycle in. If we don't look at issues like data volume holistically, there's no way we will be able to keep the costs flat, even when our demand functions are going high and to the right.

Q: How would you describe the IC's investment framework?

A: Soon after I started here, I was asked about the size of our R&D investment. I responded that that was a bad question. Research could be, at one end, pinhole cameras and batteries, and at the other, satellites that are in space for years. If I tell you R&D is 6 percent [of the IC budget]—to make up a figure—but don't give you any more granularity, do we feel better? I can answer the question, but I don't know what you will do with it. Unless it's so high, say 15 percent, in which case you'll probably tell me we're overinvested, there's not enough context to be a good question. In thinking about that and trying to explain our R&D investment, we started having conversations with the various agencies and their heads, and they agreed that what we needed to do was provide a better context.

The result was an investment framework that categorizes technology by products. It says that if you're doing what we call "heavy metal"—space stuff and things in that domain—

going from concept to operations normally takes about a decade. In IT, you can't look out more than three years, because something new will come along from Steve Jobs or Facebook. Heavy metal is not very forgiving—if you make a mistake, it's hard to do anything about it, because once you're on orbit, you've got what you've got. In IT, how many software upgrades do you get in an average week when you plug in your smartphone? It's a much different update cycle. And then you have specialty applications, small things we aren't going to produce a ton of and that may get used just once for a critical mission, and you have fundamental research in things like cryptology, which are essential but don't generate a specific technology product you can hold in your hand.

So we categorize technology research by the types of products it produces and by our level of involvement and investment. Should we lead the world in this research? Should we work with industry? Or just watch industry and adapt or adopt the innovations in the marketplace?

I take it as a good result of these discussions that, even with the budgets we're asked to look at now, the IT leadership has committed to trying to maintain our current R&D investment levels, even in the face of down budgets. I'm not sure we can maintain that, but as a starting point, the directors of the agencies have said one of the things we want to try to preserve is our R&D investment. That's huge, because in the past R&D has been one of the first things to get thrown under the bus. I'm proud of the fact that the community has come together and had the right kinds of conversations on that.

Q: What is your strategy for, as you proposed during a recent address, "empowering the intelligence community enterprise"?

A: If you summed up the things I've just talked about, it's communicate, communicate, communicate to the decision-makers: Congress, OMB and the leadership. That's a lot of communication about the contribution that technology makes to mission. And it raises a lot of other questions.

We're trying to figure out how to do global persistent coverage in the face of what is going to be an austere budget environment for the foreseeable future. How do you do that, and what is the contribution of technology in particular? How do we leverage cross-INT integration, and cross-INT tipping and queuing? Are there different CONOPS that we need to employ? We're moving toward more persistent coverage, and we've got lots of collectors— how do we leverage them better? We've got lots of data— how do we leverage that from both front end and back end? How do we get to more global persistent coverage given flat budget profiles?

It's enabling those conversations as it pertains to productivity and efficiency on the back of technology that we're really trying to push. You prioritize where those discussions are. In the scheme of things, it's more expensive to go to space than it is to do something on the ground, generally. So you look at the places where you're spending the most money

and say, can we be smarter here? It's all about mission and how we empower our producers, mission analysts and the folks doing situational awareness or targeting.

Q: What are some of the costs and promises of shifting from commoditized infrastructure toward leveraged analytics, as you have suggested?

A: I've built platforms all my life, even before it was cool. I'm a hardware and software designer from way back. Back when I did my first software, you had to do your own widgets. There wasn't such a thing as a Windows box to close and open things. All of that had to be coded up. Then somebody showed me X-Windows, and I thought that was great. I don't want to spend all of my time figuring out how to make a button flash red and be a certain size. Other people can do that stuff, and I want to work on mission. I've always been fascinated by mission, and how you can, on the DoD side for example, show situational awareness in a way that a commander can make a decision on where to deploy or pull back troops. There is a whole bunch of stuff that is just not worth fighting about, in my estimation, that doesn't do anything for you for mission. Operating systems are essential, but I don't want to have to deal with them much as the end-user. Back in the day, DOS had a command-line prompt, and you did things like "dir" to see what was on your disk, and usually it was a bunch of files that you couldn't make head nor tail of. We've come a long way.

Commoditized infrastructure is great if you're a computer scientist, which I happen to be, but if you're an end-user, it's not interesting at all. It's like making me understand what the carburetor does for my car. I just want to step on the gas pedal and have the car move.

A lot of stuff, like virtualized run-time and network-accessible storage, is not even interesting computer science anymore, given that Google, Amazon, Facebook and Twitter have figured this stuff out. Let's stop spending dollars on reinventing that part of the stack, and just get a couple of instances of that that work, and reprogram those dollars to go after mission-related analytics. Let's figure out how to use closer to 90 percent of our data, and automate as much of that as possible, so we're using our valuable analysts for operations, as opposed to trying to wade through hours and hours of collect. The last time I looked, YouTube was posting 35 hours of video per second, and it's moving to 42. Our analysts can't look at all of that, nor do we want them to. There has to be a way that we can pre-process tons of that stuff, and then say to the analyst, here's the video that actually shows how to strap yourself into a homemade bomb. Maybe that's the thing that we want to look at. We can stop doing the commoditized infrastructure stuff, and reapply that money to be more relevant to mission. We want to leverage commoditized infrastructure and invest it in mission.

Q: Please highlight some of the other programs and initiatives in your office that you think would be of interest to readers.

A: One of the things we work really hard on in this office is to be enablers vs. police. It's easy in a policy and oversight organization to fall into a checking role, as opposed to being part of the solution. In the past 20 months, we've worked on being part of the

solution and helping from an engineering and acquisition perspective, as opposed to finding fault that a document isn't perfectly formatted. That has shown itself in a number of ways. We've generated a standard of conduct that we hold ourselves to. We do communications outreach, not just within the community but also to industry, including venture capitalists and the typical supply chain. We re-launched our [Intelink] website, and we're trying to go paperless for acquisition products as well as S&T products, to have people post things or provide links to their site. I live for the day when a quarterly program review is a set of hotlink URLs, as opposed to a set of static PowerPoint graphics that took too many hours for someone to assemble and put into books that weigh a pound and a half.

An unsung hero is IARPA. Dr. Lisa Porter and her team are doing some great stuff. They do a lot of unclassified BAAs, because she's far enough ahead that we need to have the best intellects looking at our problems, even if those people are outside the IC. IARPA does a lot of open competitions. That's kind of against the grain for how the IC normally thinks about doing things. We're starting to see the result of that approach. Science Magazine's "breakthrough of the year" in 2010 was from research sponsored by IARPA. We're starting to see that pay off, in the face of a lot of people who were really nervous about us doing a lot of open, unclassified work. I hope we've shown you can do things like that and be really innovative, not just in your technology but also in how you think about problem solving in the intelligence community. I'm really proud of what IARPA has done.

Q: You have had an interesting and varied career. What lessons in particular from your experience in the private sector have shaped your approach to your current position?

A: I'm big on user engagement. The idea that you can write a spec and then take anywhere from three to 10 years to present it whole-cloth to the user as a fait accompli is a bad strategy. We're working hard, and I have some great partners here. We've gone a long way toward working with a statement of capability, rather than a thousand page spec. Let's get a succinct statement of capability that talks about mission, in terms of objectives and thresholds. Let's get funding to go with that, and then let's get out of the way of good people doing their jobs. That's agile and spiral development, particularly in IT. And by the way for ground stations—there's no reason we should develop the interface for a ground station at the same pace that we put a payload together, because those come at fundamentally different cycles.

And I tell people all the time to measure what users do, not what they say. For example, what did you Google today? If I made you really think, you might be able to tell me in general, but you couldn't tell me specifically. One of the things that I learned at AOL is that users lie, although they don't do it intentionally. If you show them a mockup, they will tell what they think they will do. But if you put them in front of a screen, you can measure what they do. Based on our experience at AOL, there was zero correlation between what users say they will do and what they do actually do when you measure it.

User engagement means measure what they do, don't ask them what they think they're going to do.

And don't be insular, which is easy to do that in our community. We have classification challenges, and sometimes it's hard for us to describe specifically the mission we're trying to do. I fight that all the time. That's why I bring IARPA up, because they are a great example of the benefits of not being insular. Prioritize ruthlessly, and shoot at the right targets. If you're not asking yourself the hard questions, and you're responsible for R&D, then maybe you're not asking the right questions for the community.

The last thing that I will say is that platforms work, and we need to leverage that a lot more than we have, because that's where you get your scale, and also where you get your dollars so you can invest in mission as opposed to basic plumbing. ♦