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Remarks by Director David H. Petraeus at In-Q-Tel CEO Summit

Excerpts from Remarks Delivered by Director David H. Petraeus at the In-Q-Tel CEO Summit (March 1, 2012)

Thank you for that kind introduction and warm welcome. It truly is a pleasure to be here with such an impressive mix of entrepreneurs, investors, and technologists—in fact, some of you, I'm sure, have all three titles to your credit. I'm also pleased that we have such strong representation from across the US Intelligence Community.

I had a great discussion at dinner last night with a number of venture capitalists, and I'm looking forward to continuing those exchanges today with In-Q-Tel partner companies. Indeed, I'm very impressed with the innovative technologies In-Q-Tel is fostering development of in partnership with its portfolio companies. I can tell you that they are providing enormous support to us as we execute various critical intelligence missions. And, on behalf of the Agency, I thank you all for helping us perform at the very high level that the American people expect of us.

Well, up front, I know it takes a wide variety of expertise to come up with the truly amazing applications that are associated with In-Q-Tel and its portfolio. And when I thought of that, I recalled the story of the four engineers driving home from one of our partner startups in Silicon Valley—a mechanical engineer, a chemical engineer, an electrical engineer, and a computer engineer. And, sure enough, while heading up the West Valley Freeway, their car broke down. This is a joke, by the way, which I don't quite get—but my team assures me it is funny, so work with me please!

They of course immediately sought to determine the cause, and the mechanical engineer naturally said, "Sounds to me as if the pistons have seized. We'll just have to strip down the engine."

"I'm not sure about that," offered the chemical engineer. "Seems to me the fuel might be contaminated. We should flush out the fuel system."

"No," the electrical engineer replied, "I think it's a grounding problem, or maybe a faulty plug lead. We need to check the wiring."

They all then turned to the computer engineer, who had said nothing, and asked for his opinion.

"Well," he said, "this is a tough one. How about if we all get out of the car and get back in again?"

Well, thanks for laughing. You know the deal...at this stage in life, I'm only as good as the

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material they give me!

I'm often asked what I find most gratifying about my job—which, by the way, is the best job in the world and, in my case, a pretty awesome entry-level position. But the reason being CIA Director is so much fun is the extraordinary people with whom I'm privileged to serve. The CIA truly is a national treasure, with a workforce unparalleled in my experience. Within our Directorate of Science and Technology, the operative trait is *diabolical* creativity. The ingenuity our people bring to our S&T work—helped by folks like you, those with whom you work, and those you lead—is world-class, and the value they add to our operations worldwide is immeasurable. And it's great to have the Director of Science & Technology, Glenn Gaffney, here with me. Our Chief Information Officer is also here, along with other DS&T deputies and the S&T equivalent from NSA.

Indeed, I've found that our technical capabilities often far exceed what you see in Tom Cruise films. But there are a few feats he can accomplish in the movies that we can't: we haven't figured out, for example, how to change an individual's fingerprints or eyeballs just yet—but give us time.

In any event, our partnership with In-Q-Tel is essential to helping identify and deliver groundbreaking technologies with mission-critical applications to the CIA and to our partner agencies. We don't necessarily ask you to be diabolical—you can leave that to us—but your creativity is vital. So, again, I truly appreciate the opportunity to be here with you today for this exchange of ideas, and I appreciate you all being here for the annual In-Q-Tel gathering.

This morning, I'd like to discuss some of the top challenges that the CIA faces—challenges that your work is helping us to meet.

To set the context at the strategic level, the Agency is engaged in a "tug of war," if you will, between the need to lead our country's war against al-Qa'ida and its affiliates, and the need for global intelligence coverage—all of this, of course, against the backdrop of tighter budgets.

As you know, our Agency has a global charter to collect intelligence. It's our job to ensure that challenges that arise in any corner of the world are not surprises to the President or to other policymakers. Certainly, we will continue relentlessly to pursue terrorists and support the troops in several different theaters. That is imperative, and the last year has seen considerable achievement in the fight against al-Qa'ida and its affiliates. But, to use the kids' soccer analogy, we cannot turn the counterterrorist fight into a game of magnetball, in which the leadership is always focused on the counterterror mission. Everyone can't flock to the ball and lose sight of the rest of the field—the whole rest of the world.

And it's an enormous field to cover: again, the whole world, with proliferation of weapons and technology, cyber threats, counterintelligence threats, the next developments in the evolution of the Arab Spring, Iran, North Korea, China, illegal narcotics, emerging powers, non-state organizations, and even lone wolves. Our duty is nothing less than to be on top of every potential foreign challenge and opportunity facing the United States—and we now have to do it without the steady budget growth we saw in the years after 9/11. And this is why my job is so intellectually stimulating.

Against this backdrop, transformational changes in the nature of intelligence work have driven us to adopt the kind of innovative technologies developed by the firms represented in this room. And I'd like to briefly discuss three major challenges of this new era: the utter transparency of the digital world, the enormous task of processing so-called Big Data, and the ever-greater need for speed.

First, given the digital transparency I just mentioned, we have to rethink our notions of identity and secrecy. In the digital world, data is everywhere, as you all know well. Data is created constantly, often unknowingly and without permission. Every byte left behind reveals information about location, habits, and, by extrapolation, intent and probable behavior. The number of data points that can be collected is virtually limitless—presenting, of course, both enormous intelligence opportunities and equally large *counter*intelligence challenges. We must, for example, figure out how to protect the identity of our officers who increasingly have a digital footprint from birth, given that proud parents document the arrival and growth of their future CIA officer in all forms of social media that the world can access for decades to come. Moreover, we have to figure out how to create the digital footprint for new identities for some officers.

As you all know, exploiting the intelligence opportunities—which is an easier subject to discuss in an unclassified setting than the counterintelligence challenges—will require a new class of in-place and remote sensors that operate across the electromagnetic spectrum. Moreover, these sensors will be increasingly interconnected.

The current "Internet of PCs" will move, of course, toward an "Internet of Things"—of devices of all types—50 to 100 billion of which will be connected to the Internet by 2020. As you know, whereas machines in the 19th century learned to do, and those in the 20th century learned to think at a rudimentary level, in the 21st century, they are learning to perceive—to actually sense and respond. Key applications developed by our In-Q-Tel investment companies are focused on technologies that are driving the Internet of Things. These include:

- Item identification, or devices engaged in tagging;
- Sensors and wireless sensor networks—devices that indeed sense and respond;
- Embedded systems—those that think and evaluate;
- And, finally, nanotechnology, allowing these devices to be small enough to function virtually anywhere.

Items of interest will be located, identified, monitored, and remotely controlled through technologies such as radio-frequency identification, sensor networks, tiny embedded servers, and energy harvesters—all connected to the next-generation Internet using abundant, low cost, and high-power computing—the latter now going to cloud computing, in many areas greater and greater supercomputing, and, ultimately, heading to quantum computing.

In practice, these technologies could lead to rapid integration of data from closed societies and provide near-continuous, persistent monitoring of virtually anywhere we choose. “Transformational” is an overused word, but I do believe it properly applies to these technologies, particularly to their effect on clandestine tradecraft. Taken together, these developments change our notions of secrecy and create innumerable challenges—as well as opportunities.

Secondly, the CIA and our Intelligence Community partners must be able to swim in the ocean of “Big Data.” Indeed, we must be world class swimmers—the best, in fact. We are inundated by constantly evolving open sources of foreign information, such as social media, that can provide invaluable, real-time insights. The Arab Spring has been a case study in how these rich streams of data can speak volumes on how a breaking crisis is liable to develop. And our Open Source Center and social media folks are on it. Of course, making sense of today’s massive quantities of unstructured data presents enormous challenges as well. For any given high-interest event, the “digital dust” to which we have access is being delivered by the equivalent of dump trucks!

The volume of Twitter and YouTube traffic in the continuing unrest in the Middle East offers an idea of what we’re up against: at the start of the Arab Spring, there were 2,200 Tweets generated every second—that equals some 190 million Tweets generated each day. And, since the beginning of the Arab Spring, those numbers have risen dramatically.

This ocean of Big Data has implications for both intelligence collection and intelligence analysis. For collection, having access to free and open information on so many topics that used to be denied to us allows our Agency to better focus our human intelligence effort—which often involves high costs and risks—on learning the key secrets that justify those costs and risks.

The implications of big data loom largest, of course, for our analytic effort. I’m convinced that the CIA has the greatest, most talented concentration of all-source intelligence analysts in the entire world; individuals unequaled in their ability to pull together the product of myriad sources of intelligence—human, signals, imagery, liaison, and so on, in addition to open sources—and to provide analysis with true insight. We place a high premium on knowledge, including regional and cultural expertise, and skills such as foreign language fluency, and fluency with applications that enable them. Indeed, we owe our analysts tools and systems that increasingly help them to give structure and meaning to the mountain of raw intelligence and to place it in proper context for the President and our policymakers.

Moreover, our analysts must discern the non-obvious relationships embedded deeply within different types of data: finding connections between a purchase here, a phone call there, a grainy video, customs and immigration information, various embedded meta-data, and so on—and then making sense of it. Ultimately, if you combine the open-source feeds such as those I mentioned with the increasingly massive volumes of classified data we receive, it’s clear that the CIA and our Community partners require new ways to organize and unify this universe of data—to make it usable, to accelerate automation, and to enable data traceability, relevance, and security. In short, these solutions must lead to automated discovery, rather than depending on the right analyst asking the right question.

Cloud computing provides important new capabilities for performing analysis across all data, allowing our analysts and decisionmakers to ask ad-hoc analytic questions of Big Data in a quick, precise fashion. New cloud computing technologies developed by In-Q-Tel partner companies are driving analytic transformation in the way organizations store, access, and process massive amounts of disparate data via massively parallel and distributed IT systems.

I am very encouraged by what I’ve seen so far. In fact, we’re excited about it. For example, among the analytic projects underway with In-Q-Tel startups is one that enables collection and analysis of worldwide social media feeds, along with projects that use either cloud computing or other methods to explore and analyze Big Data. These are very welcome additions to the initiatives we have underway to enable us to be the strongest swimmers in the ocean of Big Data.

Finally, and my third point, is that we need products that help us respond to threats at

the speed our mission demands. Despite our success in preventing another major attack on our shores since 9/11, we still face a resilient enemy in al-Qa'ida and its affiliates, an enemy every bit as determined to attack our country and our allies as it has ever been, and an enemy becoming increasingly sophisticated. The stakes are very high, and, quite simply, we must derive ever greater speed for our work from the systems you provide. Over the past decade, we have achieved considerable progress along the continuum from responsive and reactive to predictive and preventive, and we must sustain that momentum.

"Connecting the dots" may be one of biggest catch phrases of the last ten years, but it truly remains at the heart of our CT mission and many others. At the end of the day, that's how we got Bin Ladin. And In-Q-Tel companies are providing capabilities that allow our analysts to develop unique insights into seemingly intractable search-and-discovery challenges—and to do it quickly, interactively, and securely.

We require speed not only in performing our mission, but in developing and fielding tools that are as state-of-the art when they arrive in the field as when they were designed. It used to be acceptable to take years to build a new capability. Now we're lucky if we have months between identifying a need and deploying a solution. Sometimes the deadline we're facing is only weeks—or even days.

Industry's ability to rapidly prototype new products and get them to market—especially our market—is a skill that government simply cannot match. And so, in many cases, we rely on the private sector for the developmental speed that intelligence work requires. In-Q-Tel and its partner companies, through the Interface Center, help accelerate our application of technology—and, consequently, our ability to meet our global mission.

Chris Darby and the In-Q-Tel team live inside the fence, as we say, a good bit of the time. And they have become expert at translating our requirements into language that partner companies understand. And, of course, what we need often anticipates a need in the commercial arena—and that is why In-Q-Tel attracted more than \$9 in venture capital for every \$1 we put in.

I have boundless confidence in what the partnership between the CIA, our Intelligence Community colleagues, In-Q-Tel, and our partner companies can accomplish in helping us meet our global intelligence missions. There is, after all, no limit to what American ingenuity can achieve, whether in commerce, on the battlefield, or in the intelligence realm. Thanks in large part to your invaluable work, our officers enjoy an operational edge that our adversaries cannot hope to match—though they *are* trying! And we have to stay Number One!

Working together, we can best meet the high expectations that the American people have of us, especially in wartime. And we can put our nation's greatest strengths to work against America's most dangerous enemies.

You have my personal commitment that we will continue to make our market more available and accessible to you. I strongly support the In-Q-Tel model, and I am one of its biggest boosters. That's why I'm here today, and that's why I have asked Glenn Gaffney, our Director for Science and Technology, to expand our outreach to the startup community.

So, thanks for being here today, thanks for what you and your firms do in helping the Agency to be diabolically clever, and thanks for helping to keep America's Intelligence Community at the forefront of global innovation.

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