

Public-Private Cyberspace Partnerships

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May 26, 2010

National Security Cyberspace Institute, Inc. (NSCI)

Through the combination of research and education, NSCI supports public and private clients aiming to increase cyberspace awareness, interest, knowledge, and/or capabilities. NSCI is committed to helping increase security in cyberspace whenever and wherever possible. NSCI publishes a bi-weekly newsletter ([CyberPro](#)), has published numerous [whitepapers](#) on various cyberspace topics, maintains an [online cyber reference library](#), and has established an [email distribution list](#) for sharing cyber-related resumes to interested parties. NSCI is a small, veteran-owned business headquartered in Virginia.

Issues...Why public-private cyberspace partnerships? What's the holdup?

Industry experts and government officials agree that we must be more proactive in building confident and trusting cyberspace partnerships. Senator John Rockefeller, D-W.Va., says “government cannot do this on its own, and neither can the private sector.”¹ Increased collaboration in cybersecurity will lead to stronger defenses against cyber threats. Cyber partnerships will allow the government to “utilize private sector expertise and agility” and will give industry access to “government resources, legitimacy and authority.”²

In addition to these concerns from industry officials, there are other issues that prevent the government and private sector from effectively sharing information. The government often limits the information that it shares with the private sector, since the government must be careful to protect sensitive intelligence sources and the privacy rights of individuals. There is also the challenge of actually convincing industry to share information, especially about breaches. “Most organizations hit by breaches that don’t require public disclosure don’t call in law enforcement” since they “consider it an exposure risk, with little chance of their gaining any intelligence from investigators about the attack, anyway.”³ FBI director Robert Mueller says that “disclosing breaches to the FBI is the exception and not the rule today” but that the FBI is working to better protect the organization’s data and privacy and also share information with the victim organization, “rather than continue with the mostly one-way sharing that organizations traditionally have experienced when dealing with the FBI.”⁴ Mueller also pointed out that the federal government has communications protocols for sharing classified information among departments and agencies, but that they do not have the same standard and confidential ways to share information with the private sector.

Although several reports and new legislation call for better government- private sector collaboration, trust is still a major hindrance to actually forming a public-private partnership. If the private sector does not trust the government, it will not provide information to the government on data breaches and security incidents. If the government does not trust the security capabilities of the private sector, the government will not invest in the private sector. There are several reasons why industry does not seem to trust the government in public- private partnerships. Many experts point to past areas of concern such as the AT&T involvement with warrantless surveillance.⁵ A recent poll from the EastWest Institute found that 70 percent of government officials did not believe that private sector networks were secure enough, and 39 percent of the private sector security officials that participated said that government networks were not secure enough. EastWest President and CEO, John Edwin Mroz, says that “these results point to an urgent need to build trust, not only between countries but also between governments and businesses on a global level.”⁶

Trust is not the only issue that hinders public- private partnerships. Industry also has concerns about damaging their reputation, along with liability and regulatory consequences of sharing information. Companies are often

¹http://www.nextgov.com/welcome/?sec=welcom_ad&d=15&rf=http://www.nextgov.com/nextgov/ng_20100503_9627.php

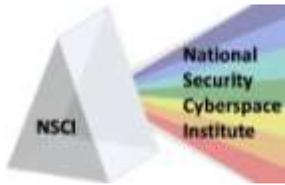
²<http://www.federaltimes.com/article/20091124/ADOP06/911240305/-1/RSS>

³http://www.darkreading.com/database_security/security/attacks/showArticle.jhtml?articleID=224200824

⁴http://www.darkreading.com/database_security/security/attacks/showArticle.jhtml?articleID=224200824

⁵<http://www.thenewnewinternet.com/2010/03/19/gov-info-sharing/>

⁶http://www.nextgov.com/nextgov/ng_20100503_9627.php



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reluctant to share with the government sensitive or proprietary information such as vulnerabilities and data breaches. Representative Anna Eshoo, D-Calif., also says that companies may not report information because they believe that they will be “bombarded by dozens of government agencies each wanting to investigate the incident.”⁷

Despite all of the recommendations for more public-private partnerships, some believe there are already too many partnerships, resulting in too much competition for resources and less time that key cybersecurity officials can lend to quality partnerships. This could affect an organization’s decision to participate in such a partnership. Melissa Hathaway says there are currently 55 government-initiated cybersecurity partnerships, and that 30 of these partnerships came from the Department of Homeland Security alone.⁸ If businesses believe they will not receive adequate priority from the government in terms of time and resources, they will not take on additional costs and legal risks involved with collaborating with government.

The lack of transparency is one of the greatest hindrances to better government- industry collaboration and partnership. Rep. Anna Eshoo, D-Calif., says that “the government makes important threat data classified” too often, and that “there has to be an atmosphere where information is not only safe, but that it is encouraged.” Eshoo says that “it does us no good in my view to keep critical information from our partners.”⁹ A recent study from the Center for Strategic and International Studies, called [In the Crossfire: Critical Infrastructure in the Age of Cyber War](#), found that only 35 percent of private firms from around the world are engaged in government information sharing, and that companies were more likely to be engaged with other companies in the private sector, since the private sector tends to believe that “information sharing with the government seems to be a one-way street.”¹⁰

Ideas...What is currently on the table for improving public-private cyberspace partnerships?

Potential benefits of improved public-private cyberspace partnerships include: “sharing of risk and cost for long-term research; access to complementary capabilities; access to specialized skills; access to new suppliers and markets; access to state-of-the-art facilities and creating new opportunities for technological learning.”¹¹

The federal government released its Cyberspace Policy Review in May 2009, and one of the key recommendations from that review was to improve partnerships between the private sector and government. According to the report, “the Federal government has the responsibility to protect and defend the country” but since “the private sector designs, builds, owns, and operates most of the network infrastructures that support government and private users,” the two “share responsibility for the security and reliability of the infrastructure and the transactions that take place on it and should work closely together to address these interdependencies.”¹²

Greg Shaffer, DHS's assistant secretary for cybersecurity and communications, says that actionable data that is shared “has to be as available as we can possibly make it for both sides to most efficiently reduce risk...holistically, the risks that we have are never going to be reduced unless we do exactly that – unless we are sharing the data across these various domains and we are doing it as quickly as we possibly can, we are not going to be in a position to deal with the growing and increasing rate of attacks.”¹³

The National Infrastructure Protection Plan provides a framework and guidelines for a public-private partnership. The NIPP says, “the enormity and complexity of the Nation’s critical infrastructure and key resources (CI/KR), the

⁷ <http://www.federalnewsradio.com/index.php?nid=35&sid=1957093>

⁸ http://www.thenewnewinternet.com/wp-content/uploads/Hathaway_Chart_May20101.pdf

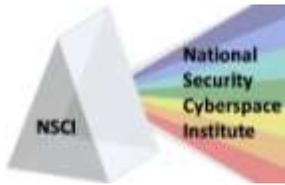
⁹ <http://www.federalnewsradio.com/index.php?nid=35&sid=1957093>

¹⁰ <http://csis.org/blog/domestic-public-private-partnerships-cybersecurity>

¹¹ <http://www.referenceforbusiness.com/management/Ex-Gov/Government-University-Industry-Partnerships.html>

¹² http://www.whitehouse.gov/assets/documents/Cyberspace_Policy_Review_final.pdf

¹³ <http://www.federalnewsradio.com/index.php?nid=35&sid=1957093>



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distributed character of its associated protective architecture, and the uncertain nature” of cyber threats provides a great challenge for the government that must be addressed through effective “partnerships committed to sharing and protecting the information.”¹⁴

Melissa Hathaway, former White House cybersecurity advisor, says that there must be more government transparency in cyber issues, and that “trust does not exist” between the government and the private sector. Hathaway recommends that there be a “safe space overseen by a trusted third party” to “facilitate information sharing.”¹⁵ William Crowell, former National Security Agency deputy director, says that “it should be possible to share information without identifying the source.”¹⁶

Despite all of the attention placed on increasing government transparency, increased transparency could actually keep some private sector organizations from entering information sharing partnerships. The recent partnership between the NSA and Google, for example, has caused some controversy. Government Computer News author William Jackson points out, “The plea for better public-private cooperation in cybersecurity has been made by both government and industry for more than 15 years, and it should be good news that Google and NSA are practicing what has been preached for so long. But if it is to serve the public interest, any public-private partnership needs to be as public as it is private.” Jackson says that “disclosure to the government is just as much a breach of privacy as disclosure to any other party” and “when a company has access to the volume and kinds of information that Google has, it has strong obligations to respect and protect the privacy of customers.”¹⁷

The Federal Times points out that government could create a cybersecurity panel that would include business and government leaders, as well as representatives from privacy and civil liberties groups. The group could help improve information sharing while protecting privacy rights and civil liberties, and could “launch discussion of the interests, risks and concerns for all sides and work to find solutions to ensure safety without unacceptable costs or risks – such as liability for consequences of failure.”¹⁸ Government can also help improve industry cooperation sharing by “considering incentive-based legislative or regulatory tools to enhance the value proposition and fostering an environment that facilitates and encourages partnership and information sharing.”¹⁹

Ellen McCarthy, president of the Intelligence and National Security Alliance, says that a public-private partnership model “will succeed only if the federal government is positioned to provide legitimate authority and legal backing, changing and realigning law and regulation where needed to create a better functioning legal and governmental regime for cybersecurity.”²⁰ According to the federal government’s Cyberspace Policy Review from 2009, “current law permits the use of some tools to protect government but not private networks.”²¹

“Some members of the private sector continue to express concern that certain federal laws might impede full collaborative partnerships and operational information sharing between the private sector and government. For example, some in industry are concerned that the information sharing and collective planning that occurs among members of the same sector under existing partnership models might be viewed as ‘collusive’ or contrary to laws forbidding restraints on trade.”²²

The government must recognize the privacy concerns of the private sector when developing public-private partnerships. The Cyberspace Policy Review stated the “government should work creatively and collaboratively

¹⁴ http://www.dhs.gov/xlibrary/assets/NIPP_SectorPartnership.pdf

¹⁵ <http://fcw.com/articles/2010/03/03/cybersecurity-policy.aspx>

¹⁶ <http://fcw.com/articles/2010/03/03/cybersecurity-policy.aspx>

¹⁷ <http://gcn.com/articles/2010/02/08/cybereye-google-nsa.aspx>

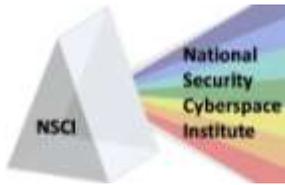
¹⁸ <http://www.federaltimes.com/article/20091124/ADOP06/911240305/-1/RSS>

¹⁹ http://www.whitehouse.gov/assets/documents/Cyberspace_Policy_Review_final.pdf

²⁰ <http://www.federaltimes.com/article/20091124/ADOP06/911240305/-1/RSS>

²¹ http://www.whitehouse.gov/assets/documents/Cyberspace_Policy_Review_final.pdf

²² http://www.whitehouse.gov/assets/documents/Cyberspace_Policy_Review_final.pdf



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with the private sector to identify tailored solutions that take into account both the need to exchange information and protect public and private interests and take an integrated approach to national and economic security.”²³

There are also disadvantages for the private sector and government sharing information. Private sector organizations must often spend a lot of money and time on information sharing partnerships. Companies must not only dedicate personnel to participate in these partnerships, but also lose time that could be used to serve other clients. Organizations also suffer reputational or brand risk like the telecommunications companies that were involved in the Foreign Intelligence Surveillance Program. Organizations also risk the loss of money resulting from unforeseen legal fees.²⁴

Answers...Where can we do more?

While there does not appear to be a clear, overarching strategy or plan regarding public-private cyberspace partnerships, the government is in fact taking some action. There have been some steps to improve transparency in the area of cyberspace. The Obama administration chose to declassify portions of the Comprehensive National Cybersecurity Initiative to increase government transparency.²⁵ The government is also developing new initiatives that will help to improve transparency. One of these initiatives, the Intelligence Community Information Integration Program (ICI2P), helps to lower the “technological and policy barriers that formerly prevented intelligence analysts from sharing information and access all available data.”²⁶ A report from National Defense Magazine says that transparency could be increased by using “multi-level security capabilities, which permits simultaneous access by users with different security clearances.” The article also says that multi-level security can use virtualization software to allow a user to “view multiple security domains simultaneously on a single display” which “provide a secure computing environment that can host multiple domains.”²⁷ These capabilities could be put to use in public-private partnerships, and would help to increase the amount of information available by ensuring the privacy and security of the information.

Some laws are currently being introduced and approved that address public-private partnerships. Rep. James Langevin, D-R.I., recently introduced legislation, H.R. 5247, which would task the White House cybersecurity director with managing collaboration with the private sector.²⁸ Another bill, the Cybersecurity Act, S. 773, includes amendments that define how the president and private sector will work together. The bill emphasizes the importance of collaboration between the federal government and private sector, and is now on its way to the Senate for approval.²⁹ Several other cyber-related bills are also in various stages.³⁰

A number of initiatives to improve information sharing between government and industry are underway. The National Cyber-Forensics and Training Alliance brings together officials from the Federal Bureau of Investigation, Carnegie Mellon University’s Computer Emergency Response Team, West Virginia University, and other private institutions to “break the barriers placed between government, academics, and private industry” to “provide an essential middle ground for communication, collaboration, coordination/de-confliction and training among members.”³¹ The Cross-Sector Cybersecurity Working Group is a forum for government and private sector organizations to share information and address risks from the critical infrastructure and key resources sectors. “This cross-sector perspective facilitates the sharing of perspectives and knowledge about various cybersecurity

²³ http://www.whitehouse.gov/assets/documents/Cyberspace_Policy_Review_final.pdf

²⁴ <http://www.thenewnewinternet.com/2010/05/07/why-successful-partnerships-are-critical-for-promoting-cybersecurity/>

²⁵ <http://www.thenewnewinternet.com/2010/03/02/cnci-declassified/>

²⁶ <http://www.nationaldefensemagazine.org/archive/2010/May/Pages/ShareandProtectSensitiveData.aspx>

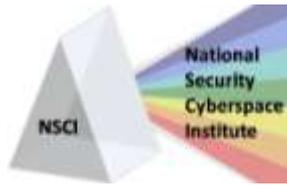
²⁷ <http://www.nationaldefensemagazine.org/archive/2010/May/Pages/ShareandProtectSensitiveData.aspx>

²⁸ <http://fcw.com/articles/2010/05/12/langevin-bill-051210.aspx>

²⁹ <http://www.darkreading.com/security/government/showArticle.jhtml?articleID=224200245>

³⁰ <http://belfercenter.ksg.harvard.edu/files/legislative-landscape-publish-final.pdf>

³¹ <http://www.ncfta.net/main/about-us/>



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concerns, such as common vulnerabilities and protective measures, and leverages functional cyber expertise in a comprehensive forum.”³²

The Department of Homeland Security also recently announced a new pilot program for improving information sharing between DHS officials and private CIOs and CSOs using data fusion centers that were established in 2003. Amy Kudwa, a DHS spokeswoman, says that the program will allow CIOs and CSOs to attend government-run cybersecurity briefings and discussions, and also read classified emails – generated from the fusion centers – regarding cyber threats.³³ While promising, this effort has been criticized as being too high level and in many instances the CIOs and CSOs are forbidden to take the information back to their security experts where application and adjustment would really take place. Real collaboration and information sharing must happen on a continuing, real-time basis at the level of network security operations.

These programs have Melissa Hathaway “optimistic” about the future of government- private sector information sharing. Hathaway says, “I am optimistic that we can have more increased private collaboration. I think that the defense industrial base is moving things along... The Department of Homeland Security is working with the Department of Defense to replicate that in the financial services sector.”³⁴

We, too, are encouraged by the above efforts to improve public-private cyberspace partnerships. While not perfect or all-encompassing, they certainly represent interest and intent in this area. We believe the lack of a clear strategy and plan for addressing public-private cyberspace partnerships has been a key contributor to the incomplete and somewhat ad hoc nature of activities to date. The following are offered as some specifics that we believe would help to further improve public-private cyberspace partnerships.

At the crux of the matter is the issue as to whether the government approach will be one of arm-twisting via regulation, takeovers, and penalties; one of trust, confidence, collaboration, and consensus when possible; and/or some combination thereof. Our recommendation is for the latter, hybrid approach. Given that the bulk of cyberspace is owned and operated by the private sector, the willing participation of companies and citizens will make solutions to cyberspace challenges and issues much more timely, flexible, affordable, and sustainable. Realistically, it is unlikely that positive incentives alone will move the cyber football down the field as quickly as needed. For this reason some regulation will likely be necessary.

Numerous polls indicate a general distrust of the federal government. Cyberspace is but one area where this distrust may necessitate a need for the government to demonstrate trustworthiness and competence. So what are some ways to increase private (company and citizen) trust and confidence in the government as it relates to cyberspace?

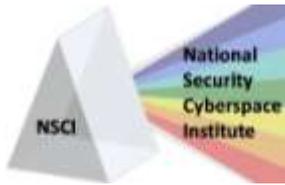
To start, government funding and support for a public awareness campaign specific to cyberspace should be increased. The public must understand the importance of cyberspace if we expect more inclusive and informed public-private cyberspace partnerships, not to mention improved cyberspace security. As an example, a beneficial first step may be additional information and discussion on the day to day duties and operations of USCYBERCOM. This may help to develop the trust that the military is not “invading” the private networks, nor is the military on a domestic spying mission writ large. Equally important may be the realization that beyond strategic and tactical warning, and situational awareness, the DoD will actually be very limited in what they can do in protecting .com / .gov networks once an attack has begun. The reality is that the tools will not be in place, thus the connections and visibility probably will not be possible during an attack.

An additional area for increased government funding is research and development. Guidance on areas needing exploration should be provided, but it should not be overly restrictive. Public-private partnerships have the

³² http://itlaw.wikia.com/wiki/Cross-Sector_Cybersecurity_Working_Group

³³ <http://www.thenewnewinternet.com/2010/03/19/gov-info-sharing/>

³⁴ http://www.govinfosecurity.com/articles.php?art_id=2311



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potential to help companies begin to develop new technologies to improve both public and private cyberspace capabilities, especially in areas that are too risky or expensive for private sector investment alone. We see examples of this in other areas today. In the Energy Department, for example, important energy-efficient technologies would not have been developed if it were not for the DOE's financial and technical assistance. Without the partnership with the DOE, "it is unlikely that the companies would have actively pursued what were then perceived as high-risk, uncertain technologies."³⁵

One government benefit from public-private partnerships might be access to the cyberspace experience and expertise available in the private sector. With the majority of critical infrastructure being owned by the private sector, there is both cyberspace quality and quantity in the private sector that simply does not currently exist within the government. Numerous efforts are being considered and/or underway to increase the number and qualifications of government cyberspace workers. Most agree this will not happen quickly. Perhaps it is time to explore, in detail, options for better leveraging private sector cyberspace talent while plans to increase the number of government cyberspace workers continue to be discussed. A government investment in partnering with and leveraging the private sector will likely pay much greater dividends than attempting to duplicate that expertise and experience within government.

Many have mentioned the need for major legislative changes in order to increase government transparency while still protecting the privacy rights of private sector organizations and citizens, and providing sufficient assurance to private industry as it relates to their sharing of information with the government. While we do not believe transparency in and of itself will fix much, we do acknowledge improvements are needed and it will take time and patience to gain consensus in this area. Open discussion with stakeholders is essential.

Conferences, panels, and online forums (i.e., social media) are good opportunities to begin the engagement with stakeholders regarding the balance of public-private transparency, accountability, liability, and privacy expectations.

Conferences and panels may also serve to increase public-private cyberspace trust and confidence.

Panels composed of both public and private cyberspace stakeholders may be particularly useful in activities such as the below:

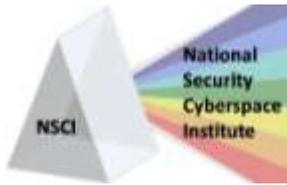
- Defining U.S. critical infrastructure cyberspace systems, and performing a threat / vulnerability assessment of these systems
- Identifying, and sharing, cyberspace best practices and lessons learned
- Developing and maintaining a discoverable catalog of cyberspace research and solutions
- Developing and maintaining a discoverable catalog of cyberspace education and training opportunities
- Identifying, and sharing, threat and vulnerability information
- Identifying cyberspace risk assessment mechanisms and metrics
- A clear set of authorities outlining who can do what, including safeguards to indemnify voluntary players who unwittingly overstep or misstep
- A clear set of responsibilities Internationally, Nationally (Private/Public/Military), Industry/Service/Software-Hardware Providers, and individually that everyone is held legally responsible to adhere to.³⁶

There are currently government programs in place that provide scholarships for students pursuing cyber-related degrees.³⁷ In return for the scholarship, students are expected to serve in the government for a period of time.

³⁵ <http://www.aceee.org/pubs/e961.htm>

³⁶ No more allowing attacks to transit through your country's servers, no more fine print on software programs, no more computers sold without basic virus/firewalls, no more not updating your protection programs... for example.

³⁷ <https://www.sfs.opm.gov/>



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This approach could be expanded to include a cyberspace exchange program between the public and private sectors. For example, a Cisco employee could go work at U.S. Cyber Command (USCYBERCOM) for one year while a USCYBERCOM employee goes to Cisco for a year. This would give both sides a much better appreciation for the issues and capabilities of the other, while also helping to build trust, confidence, and personal relationships.

Actually sharing information will likely need to start with the government. As discussed in the Issues section above, many corporations are reluctant to share information with the government. A process must be established that results in both government and industry being aware of what information is needed, how commercially competitive or company sensitive information is stripped off, and what happens with that information when it is shared. This must be balanced with the need for information recipients and decision makers to ensure legitimate bona fides regarding the information being received (e.g. quality, accuracy). Someone needs to "step out" to break the current logjam. We recommend starting with the government sharing information with industry, initially without a quid pro quo involved. This will serve to improve trust and confidence, while also enabling industry with improved cyberspace situational awareness. If our government trusts potential adversaries enough to adopt an "if we do it, they will, too" policy while unilaterally disclosing details about our nuclear arsenal and reducing our number of weapons, then surely our government should be willing to demonstrate similar trust in our American businesses by sharing cyberspace threat and other information of interest affecting cyber security with our own American businesses.

Finally, in an effort to further develop public-private relationships, private industry should be invited to attend government-run cyberspace courses and/or exercises. Developing personal relationships early in their careers will pay dividends for many years. The increased understanding will also improve communication, an essential ingredient for meaningful public-private cyberspace partnerships.