

About the Author

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Key Points

- ◆ The Federal Intelligence Community and the Department of Defense have made substantial commitments in the venture capital community through In-Q-Tel, OnPoint Technologies, and DeVenCI. Despite these commitments, knowledge of these programs throughout the government is limited.
- ◆ Government venture capital (GVC) programs have insight into many small technology companies that are otherwise invisible. To maximize the value of GVC investments, company information should be shared among government agencies.
- ◆ Despite their innovative approaches to investment funding, GVC programs still struggle with the difficult task of transferring new technologies to the government. Classification, timing, culture, and incentive issues all plague successful technology transfer; however, these challenges are not insurmountable.
- ◆ Successful venture capital efforts in industry often rely on a “technology champion” to usher new technologies into the parent company. GVC programs should adopt a similar strategy to increase the transfer rate of promising technologies.

Maximizing the Returns of Government Venture Capital Programs

by Andrew S. Mara

The stories of Google and Segway certainly end differently. With a market capitalization of over \$180 billion, Google is arguably the biggest success in the information technology (IT) industry in the last decade. The phrase *google it* has worked its way into everyday language and dictionaries. On the other hand, Segway remains a privately held company whose products are largely relegated to use by tourists in major cities and security personnel at airports. We certainly do not hear people say that they “segwayed” to work this morning.

Oddly enough, these companies started out in similar places. Both had potentially game-changing new technologies that needed investment to further their development and company growth, and both received this investment from Kleiner, Perkins, Caufield, & Byers, a well-regarded venture capital (VC) firm.

The stories of Google and Segway succinctly demonstrate both the power and pitfalls of the VC industry. Venture capitalists have unparalleled access to cutting-edge technology. However, this technology is generally in an immature state, and its successful development and implementation are far from guaranteed. Venture capitalists provide the funding necessary to advance the technology and in return are given partial ownership (an equity stake) in the company. In this sense, the Federal Government and venture capitalists are involved in related, though separated, worlds. Like venture capitalists, the government invests billions of dollars in the research and development (R&D) of new technologies, many of which will never mature into a usable product. The government does not receive an equity stake, however.

For decades, the government was the major source of cutting-edge technology research. In the 1980s and 1990s, however, private sector investment began to outstrip public sector investment, especially in the IT field. Suddenly, the

government no longer had its finger on the pulse of technology development. It was falling behind the private sector.

In response, several government agencies created their own VC-like entities meant to reconnect the government to the private sector and harness new technology investments. The largest of these programs, and the topics of this paper, are the Central Intelligence Agency (and the

work programs provide funding for a company to develop its technology in a way that suits IC needs

larger Intelligence Community) In-Q-Tel, the U.S. Army OnPoint Technologies, and the Department of Defense (DOD) Defense Venture Catalyst Initiative (DeVenCI).

This paper examines how government venture capital (GVC) initiatives can provide four key benefits to the government: a wider “window” on new technology development, an increased potential government supplier base, more leverage of private investment, and more rapid acquisition of new technologies.

The majority of the information in this paper was compiled from interviews with corporate and private venture capitalists and survey responses as well as interviews from GVC-backed companies. All of the surveys and interviews were nonattributional, a necessary caveat to ensure that the interviewees could provide honest and uncensored responses. While this study generally focuses on improvements to these programs, it should be noted that most companies surveyed and interviewed were largely positive about their interaction with GVC programs. In a survey, 81.5 percent of In-Q-Tel and 100 percent of OnPoint Technologies companies rated these programs as similar to or better than their private VC investors.¹

GVC Programs

In-Q-Tel

Founded in 1999, In-Q-Tel is a nonprofit entity funded entirely by the Federal Intelligence Community

(IC). Through 2007, In-Q-Tel had received approximately \$350 million in funding, of which about \$150 million has been directly invested in small technology companies either as equity or “work program” investments.² The majority of In-Q-Tel investments are in the IT field, which is fitting given IC interest in data management, analysis, and processing. Connecting In-Q-Tel to the CIA is the In-Q-Tel Interface Center (QIC), whose main mission is to connect the technologies in the In-Q-Tel portfolio to potential Central Intelligence Agency (CIA) missions. The QIC also serves as the portal through which the unclassified work from the company is transferred to the classified work of the IC. Since most companies will not have personnel with proper security clearances, this portal is extremely important. Moreover, the QIC provides an annual “problem set” that provides guidance to In-Q-Tel in terms of the types of technology that the CIA finds of interest. In-Q-Tel identifies companies that may address an issue in the problem set and then further consults with the QIC to verify that a proper match has been made. Only then does In-Q-Tel make an investment.³

In-Q-Tel has two options when making an investment. It can make either an equity investment, where it receives part ownership in the company, or a work program investment. Work programs typically provide funding for a company to develop its technology in a way that suits IC needs. For example, if a company has developed a new communications antenna, but the CIA needs that antenna to be 50 percent smaller, it could make a work program investment to help fund that reduction in size. Typically, In-Q-Tel makes both equity and work program investments. In addition to equity in the company, In-Q-Tel receives an observer seat on the board of the company. While this observer does not have a vote in company decisions, he has access to all of the information about them, providing In-Q-Tel with an excellent way to monitor the company’s progress. Through 2009, In-Q-Tel reported more than 100 investments.⁴

OnPoint Technologies

OnPoint Technologies was founded by the U.S. Army in 2002 specifically to address the Service’s con-

tinued need for new power and energy solutions. Like In-Q-Tel, OnPoint is run as a separate, nonprofit entity. OnPoint was initially funded with approximately \$62 million of unspent R&D dollars that were “swept up” at the end of government fiscal years and then invested in OnPoint. The authority to add money to OnPoint has since expired; thus, there are no plans for it to receive additional funding. However, OnPoint has done an impressive job of growing its original investment. Public records indicate that OnPoint now has total assets of almost \$150 million.⁵ This increase in assets is caused by an increase in value of OnPoint’s portfolio companies. Given its small fund size, OnPoint is not capable of making work program investments and makes only equity investments in early stage technology companies. It monitors the company’s progress

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through its position on the management board. There is no organization analogous to the QIC, so all investments are discussed directly with potential “customers” within the Army to ensure that OnPoint’s portfolio companies match current Service needs. Furthermore, OnPoint’s staff is in charge of facilitating technology transfers to the Army, and the pay structure provides substantial incentives and bonuses for successful transfers. Through 2009, OnPoint had made 13 investments.

DeVenCI

Unlike In-Q-Tel and OnPoint, DeVenCI does not make direct investments in technology companies. DeVenCI was officially formed by DOD in 2006, though it had been operating as an unofficial group for several years prior. DeVenCI uses a number of voluntary VC “consultants” who help link private companies to potential DOD customers.⁶ DeVenCI communicates the needs of

its customers to the VC consultants, who provide information on companies that may be able to fit those needs. DeVenCI then sets up meetings and presentations between the two groups to explore whether there may be a match. Thus, DeVenCI is more of a meeting broker than a venture capitalist. Recently, DeVenCI has received a small amount of funding that it can use to sponsor field tests and trials of new technologies. Because DeVenCI does not make investments, it is able to interact with a much larger number of companies on a smaller budget than either OnPoint or In-Q-Tel. DeVenCI has hosted meetings between more than a hundred small companies and potential DOD customers.

Opening the Window on Technology

Venture capitalists have tremendous access to small, high-tech companies since they are often the only potential source of funding for high-risk, high-reward business ventures. Thus, VC firms review thousands of business plans a year (of which approximately 1 percent receive an investment), providing them with a comprehensive look at technology development. The stream of business plans, known in the industry as “deal flow,” is the lifeblood for any VC investor. Furthermore, many of the companies in this deal flow are not inclined to interact with or market to the government. The government is not likely to be a high-volume customer, and the procurement process is slow and intimidating. Thus, there are literally thousands of small technology companies that the government is unaware of. If the government has knowledge of technical developments in the private sector, it can better position itself to ensure it is capitalizing on those developments and prevent duplicative efforts. This knowledge is known as the “window” on new technology.

All three of the GVC programs are actively involved in expanding their sponsoring agency’s window on technology. As a potential investor, In-Q-Tel has reviewed more than 7,500 business plans and gathered information on technologies that almost certainly would have otherwise escaped the IC’s eye.⁷ While only a small fraction of

these business plans ever receive an In-Q-Tel investment, the Intelligence Community still benefits from knowledge of developments in the private sector technology pipeline. Likewise, OnPoint has reviewed over 500 business plans, in step with its substantially smaller budget and narrower focus.⁸ Both of these programs have established connections within the VC community allowing them to share some of the deal flow from other private firms.

DeVenCI uses Technology Showcase events to provide a window on technology not only to the DeVenCI staff, but also to interested DOD groups. DeVenCI likely has a narrower window since it does not actively review business plans or invest in small companies. However, by using its VC consultants, it gains insights into the deal flow of multiple private VC firms at a fraction of the cost of making investments.

GVC programs should be able to find and fund companies that would otherwise be excluded from the government supplier base

Thus, each GVC program appears to be observing new technology cycles that otherwise might have remained obscured. However, for the most part, knowledge of the deal flow of GVC programs remains within the program itself and is not shared or widely disseminated throughout the government. Some groups in the Intelligence Community who contribute funds to In-Q-Tel indicated that while they had mechanisms to provide input on potential investments, they did not have any way to systematically search In-Q-Tel-investigated companies to gather a larger sense of developments in the IT field. Likewise, many of the military Services are interested in issues of power and energy, and the author has spoken to numerous officials who were completely unaware of OnPoint's efforts.

There are some concerns of privacy involved in sharing this information. Certainly, some companies may not wish to have information on their technology released to

other government agencies. Some companies are operating in "stealth mode," where they release little information on their workings. But these concerns on confidentiality seem overblown; an overwhelming number of the venture capitalists and companies interviewed for this study welcomed the opportunity to share information on their technology with potential government customers. Indeed, information on the companies in GVC portfolios is often already available to some extent on company Web sites, or through VC databases such as Dow Jones VentureSource or Thompson VentureXpert.⁹ Secrecy concerns could be mitigated by creating a password-protected database available only to government personnel. By providing the window on technology to a wider range of government offices, existing investments in GVC could be further leveraged for maximum effect.

One can easily envision, for example, a Defense Advanced Research Projects Agency program manager searching company information to determine the state of the art in microcommunications. Or think of the value that such a database could provide to the new Marine Corps Expeditionary Energy Office (E²O). By providing a glance at the energy technologies currently under development, the E²O would have a significant jump on identifying new technologies for Marines deployed in Iraq and Afghanistan. While creating a database of companies in the deal flow of GVC would likely take some additional manpower (but probably no more than one full-time position for each program), this cost would be more than offset by the value created. The database need not contain detailed information. One-page summaries of the technology along with contact information for the companies would be sufficient to extend the window on technology to potentially interested government parties.

Recommendation 1: GVC programs should create a searchable database containing contact information and technology descriptions for each company in their deal flow.

Increasing Potential Government Supplier Base

Government (and DOD in particular) difficulties in dealing with small companies are well documented.¹⁰ To

its credit, the government does make a sizeable investment in small companies via the Small Business Innovation Research (SBIR) program, which provides research grants to small companies. Reviews of the SBIR program are mixed and will not be covered here. Unfortunately, a recent court ruling specifically excludes venture-backed companies from receiving SBIR grants, removing an entire segment of small technology companies from the major source of engagement.¹¹

Thus, GVC programs should be able to find and fund companies that would otherwise be excluded from the government supplier base. Indeed, this appears to be an area where GVC is performing well. Of the 13 companies in the OnPoint portfolio, none had received government contracts or SBIR grants prior to interacting with OnPoint.¹² Thus, all of OnPoint's companies were new government suppliers. At least some of these companies may have been attracted to the government as a potential customer even without OnPoint's interactions. However, a survey of six OnPoint companies shows that none of them thought they were "highly" or "extremely" likely to sell to the government before OnPoint, versus 50 percent after. Indeed, one OnPoint company's technology is already implemented in batteries stocked and used by Army Soldiers.

In-Q-Tel appears to have had similar success. In a survey of 39 In-Q-Tel portfolio companies, only 26.3 percent of companies thought that they were highly or extremely likely to sell to the government prior to their In-Q-Tel interactions. This number substantially increased to 78.9 percent post-In-Q-Tel interaction. Additionally, at least 62 of the 103 In-Q-Tel portfolio companies had not received a government contract or SBIR grant prior to In-Q-Tel investment, indicating that 60.2 percent of these portfolio companies are new potential suppliers.¹³

While technical difficulties precluded a similar survey of DeVenCI companies, at least 60 of 128 companies (46.9 percent)¹⁴ that have presented at DeVenCI technology events had no prior contracts from the government.

Overall, GVC programs have done an admirable job of bringing new companies into the potential govern-

ment supplier base; however, improvements could certainly be made to leverage these contacts throughout the government. A separate study conducted by the author indicates that approximately 25 percent of companies in the In-Q-Tel and OnPoint portfolios go on to win government contracts after investment. While this number is impressive, it is possible that it could be substantially improved by spreading word of portfolio companies, work program results, and successful prototypes or field tests throughout the government. The author has met many project managers and research scientists within DOD (which has investments in all three GVC programs) who are completely unaware of some or all of the GVC programs. One can easily imagine a scenario where a technology field test may not fit the CIA's needs but is well suited for a Navy project.

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Engaging with other entities throughout the government is a herculean task and will likely require additional effort and manpower. One mode of outreach would be to include more detailed white papers for the technology in each portfolio company. GVC programs will have intimate knowledge of the technology in these companies (from their board observers and due diligence before investment), which could be shared from a for-official-use-only portal. Privacy and confidentiality could raise issues, but, as indicated earlier, interviews with venture capitalists and portfolio companies indicate that most companies welcome the opportunity to share their technology with new government customers. Complementary models could include portfolio company showcases, GVC program participation in existing technology events (that is, SBIR conferences), or technology newsletters distributed to project

managers, government laboratory personnel, and acquisition officials.

Recommendation 2: GVC programs should actively engage and cross-promote portfolio companies throughout the government. Detailed technology descriptions, work program developments, and field test results should be available to government personnel via a searchable database. Introducing portfolio companies to many government customers will leverage the new potential supplier base created by GVC programs.

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Leveraging Private Investment

There can be little doubt that GVC programs are leveraging private investment. The fact that they are bringing new potential suppliers into the government supplier base (as described above) constitutes leveraging private investment, even without counting the number of private VC dollars invested in GVC portfolio companies. Through 2007, In-Q-Tel reports that it has leveraged more than \$1.4 billion,¹⁵ and OnPoint claims about \$1 billion in private VC co-investment.¹⁶ DeVenCI, by its noninvesting nature, is leveraging private investment by default. These claims must be taken with a grain of salt, however, since the private VC investment would have almost certainly occurred without any GVC action. Thus, the private dollars are only truly leveraged if the GVC investment leads to actual transfer of a new technology to a government customer.

Surveys of 34 In-Q-Tel companies that received equity investments yielded some surprising results that affect how GVC leverages private investments. Only roughly a third of surveyed In-Q-Tel companies indicated that the equity investment was highly or extremely

important for developing their technology. This number paled in comparison to 65.4 percent of companies who found work program investment highly or extremely important. A similar discrepancy was reported for the importance of equity and work program investments on potential sales to government customers (51.5 percent versus 71.4 percent highly or extremely important, respectively). These results line up with responses indicating that of equity investments, work program investments, links to government customers, and association with the In-Q-Tel brand, more than half of the companies found equity investments to be the least valuable asset of their interactions with In-Q-Tel. Furthermore, 59 percent of companies reported that they were very likely to have received sufficient funding for their business ventures without any In-Q-Tel investment.

Given that In-Q-Tel is not focused on financial gains, these results question whether equity investments are a crucial part of the In-Q-Tel process. Indeed, some interviewed companies observed that In-Q-Tel seemed insistent on an equity investment (in addition to a work program investment) even if the company was not particularly interested in it.

From In-Q-Tel's perspective, there certainly could be value in making equity investments. Such investments could be necessary to gain access to private VC deal flow, though now that In-Q-Tel is established in the VC community, continued equity investments might be less important. Alternatively, In-Q-Tel may find that the board observer seat they receive in return for an investment is crucial to meeting In-Q-Tel's mission goals. Nevertheless, In-Q-Tel may be able to transition from equity to work program investments and increase the technological returns to the Intelligence Community. Indeed, it appears that such a shift may already be occurring as In-Q-Tel has been slowly trending from a traditional VC model to a "strategic investor" approach.

OnPoint, on the other hand, is largely confined to equity investments. It simply does not have existing funds to support a work program approach, and since it will not receive any additional funding, it is reliant on returns from

equity investments to generate new capital for future endeavors. Companies report that equity investments from OnPoint are quite important for both technology development and government sales, with 66.7 percent and 60 percent of companies claiming they are highly or extremely important, respectively. Moreover, since OnPoint does not have any work program investments to influence technology development, a seat on management boards of portfolio companies is one of the few tools available.

Recommendation 3: In-Q-Tel should continue to shift away from equity investments as work program investments may yield greater benefits for technology development and sale to the government.

Speeding Acquisition of New Technologies

Perhaps the most substantial benefit that GVC can provide is access to new technologies on a compressed timeline. All of the GVC programs report some success. In-Q-Tel reports more than 100 “technology transition events,” though their definition includes delivery of prototypes and field trials that may never actually be acquired or integrated. Likewise, OnPoint has fielded at least one major success (out of 13 portfolio companies). A state of charge indicator produced by PowerPrecise Solutions has been integrated into the BA-5590 battery, reportedly saving the Army more than \$281 million. Another OnPoint company is currently field testing methanol fuel cells in U.S. operations in the Middle East. Success for DeVenCI is harder to quantify given that it does not actually invest in companies; however, early results from their field test pilot program look promising.

Unfortunately, the technology transfer benefit is also the hardest to realize. Corporate venture capital (CVC) programs, which share this strategic goal with GVC, shed some light on how difficult it is to incorporate new technologies into existing R&D structures. All of the CVC programs interviewed for this study reported having an extremely difficult time integrating technologies from portfolio companies. Managers of existing R&D programs were very skeptical of products that “were not in-

vented here” and did not want to assume the additional risk of attempting to integrate a new unknown technology. Furthermore, even if the technology itself was a perfect fit, it was difficult to align the development cycles of the portfolio company and the corporate research division.

Solutions to the technology integration problem differed greatly, and some CVC programs even ceased operations altogether. Several CVC units noted that the easiest way to integrate a new technology was to acquire the portfolio company outright. Motorola Ventures (which was not interviewed for this study), for example, has directly acquired at least three of its portfolio companies since 2000.¹⁷ Clearly, direct acquisition is not an option for the government, and it is discouraging that multiple CVC units viewed acquisition as the most promising route for technology transfer.

A separate approach cited by some companies was to integrate project managers from corporate R&D into the CVC efforts. These managers were “borrowed” from the R&D arm to help identify and monitor the development of technologies that were applicable to corporate R&D goals. Once a technology was sufficiently mature to be inserted into corporate efforts, the project manager was

the program manager chooses which companies will best help his current project

returned to the R&D division to serve as the “technology champion” who would shepherd the technology into the corporate pipeline. Indeed, there are difficulties with this approach. Companies had to balance the different corporate climates and pay structures in the VC and R&D arms. Furthermore, successful integration requires a strong technology champion, and some companies were reluctant to “loan out” high-performing employees to the CVC arm. Nevertheless, there could be strong parallels between this approach and GVC. Some of the reported success stories for the SBIR program center on particularly talented

or motivated project managers who serve as technology champions for their SBIR firms. Additionally, some government officials interviewed in this study indicated that rapid acquisition was possible, even given existing acquisition methods, if the acquiring unit had a talented and motivated acquisition officer. Clearly, it would be possible to apply the borrowed technology champion approach to GVC. GVC programs could recruit project managers from interested government units for 2- or 3-year stints, who would then return to their original locations to integrate the technology into their home office.

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One GVC program interviewed actually changed its model of VC investing to adapt a technology champion-type model. After struggling to integrate portfolio technology companies, the VC arm involved its R&D arms directly in the investment selection process. Project managers now go to the VC arm and request investments in particular types of technology. Once the VC arm has identified potential fits, the project manager helps decide whether that company will receive an investment. Simply put, the program manager chooses which companies will best help his current project, and he becomes the technology champion because he now has a vested interest in the development and integration of that particular technology. This approach is directly applicable to GVC investing. While the QIC (and OnPoint's interactions with potential customers) attempts a similar approach, there is no direct connection between the portfolio company and the managers of existing projects. If the budding field of behavioral economics has taught us one thing, it is that people respond to incentives (sometimes in unpredictable ways). By directly connecting the portfolio company's success to the project manager's own goals, GVC could create a strong incentive to overcome

the hurdles of technology integration. While companies interviewed were generally happy with their interactions with In-Q-Tel, they repeatedly stressed the frustrations of being unable to connect directly to their customers. Classification issues certainly come into play in these interactions, and they are discussed in more detail later.

Recommendation 4: GVC programs need to develop methods to reliably produce technology champions in government agencies. Such champions could be personnel borrowed from R&D efforts who then return to the R&D world to shepherd in new technologies. Alternatively, project managers could be directly involved (and incentivized) in portfolio company selection linking successful technology integration to the project manager's own goals and priorities.

To this point, this paper has described organizational approaches to help speed technology transfer. However, there are additional "information-based" approaches that could better prepare portfolio companies to deal with existing government infrastructure. Interviews with VC firms and portfolio companies consistently revealed that both of these groups were extremely poorly informed about the government procurement process. While companies were interested in selling to the government and understood that the process would likely take several years, they could not even identify the proper place to begin preparing. Along these lines, multiple interviewees suggested that having a primer on the government acquisition process specifically geared toward small venture-backed companies would be of immense value. Each GVC program may need to adapt this primer to their specific government customers (for example, Army, CIA); however, relatively little effort would be required to produce a document that would greatly help companies deal with the technology transfer process.

Recommendation 5: Create a primer on the government procurement process that is specific to small venture-backed companies.

A more intense intervention would be to create an office within each VC program specifically designed to help companies navigate the acquisition process. Such an office would need to be staffed with an acquisitions expert who was well connected to the potential government customer.

How Classification Issues Affect GVC

Technology transfer becomes even more difficult when the technology may be used for or with classified systems. Indeed, several companies indicated that the lack of a security clearance made it impossible for them to directly interact with the government customer. While the In-Q-Tel Interface Center (QIC) attempts to fill this gap, there is little doubt that a direct connection to the customer would be a substantial advantage. DeVenCI deals with government agencies with classified programs but does not have a body similar to the QIC. Thus, it is difficult for DeVenCI to relate classified needs to companies that may be able to address them. While it is clearly unreasonable to acquire security clearances for all portfolio company employees, it may be possible to get low-level clearances for VC consultants. If the consultants have a better idea of the exact needs of the government customer, they may be able to better pick companies that match those needs.

As one government official noted, a skilled acquisition agent can greatly speed the technology transfer process.

Someone with extensive experience in R&D who could bring project managers and companies together would also be valuable. Granted, technology transition offices for the SBIR program already exist. But the usefulness of these offices was repeatedly questioned by company officials, with one going so far as to state that technology transfer offices were “largely considered a joke” within the venture-backed business community. Indeed, these offices are generally insufficiently staffed to provide the detailed interactions necessary to help navigate the requirements of the Federal acquisitions process. By limiting access to these technology transition offices to companies in GVC portfolios, companies could receive a higher level of personal attention and advice. Many companies indicated that just having someone to call when they had a question would be helpful.

It is important to reemphasize that the staff in these VC technology transition offices needs to be very familiar with the acquisition processes of the government customer. In addition, while In-Q-Tel may have the budget to fund such an effort, neither DeVenCI nor OnPoint has a staff or budget capable of doing so. Thus, a considerable investment would need to be made in both

programs to hasten technology transfer. Unfortunately, the SBIR program suggests that such investments are difficult to make. Multiple reports have recommended a staffing budget for SBIR grants, but to date, all mandated SBIR funds still must be dispersed as grants.

Recommendation 6: Create technology transition offices with skilled acquisition experts to provide guidance and advice to companies as they navigate the acquisition process.

Conclusion

There is no doubt that GVC programs have yielded both strategic and material benefits for their government customers. A quantitative analysis of these benefits is the subject of another study. However, this study has identified six key recommendations that could help maximize the benefits that GVC programs currently provide. Information-sharing has always been a problem for government agencies, and GVC is no exception. Each individual program has done an admirable job of surveying the realm of privately backed technology companies, but this information is not readily available to potential government customers. Several GVC program officials interviewed for this study suggested that privacy concerns might prevent such information-sharing; however, interviews with

the companies themselves (and with private VC fund managers) indicated that these fears were exaggerated. In fact, most companies welcomed the ability to share information about their technology with the government. Making sure that this information is easily available will ensure that GVC efforts are fully leveraged.

In terms of technology transfer, this study has found that strong technology champions are necessary to integrate technologies from GVC portfolio companies into government R&D programs. These champions provide the intense promotion and motivation necessary to overcome the difficulties of integrating a new technology. In addition, creating a primer on the government acquisition process could help prepare small technology companies for the hurdles they will face when attempting to sell to the government. Along these same lines, many companies and VC fund managers indicated that having a contact in the government who could answer questions about the acquisition process would be extremely helpful. In fact, of all of the ideas discussed with companies, the creation of this particular office was often cited as the most promising.

The difficulties with implementing these recommendations primarily revolve around personnel issues. To create the databases, primers, technology champions, and acquisition offices, GVC programs will need additional funding. By limiting the scope of these programs solely to companies involved in GVC programs, the number of new personnel required should not be overwhelming. Indeed, it is likely that one full-time employee could handle most of the information-sharing responsibilities. While additional employees would be needed to implement the

other recommendations, the added value of these employees should outweigh the costs.

Notes

¹ Approximately 100 In-Q-Tel- and OnPoint-backed companies were sent surveys both electronically and via mail in June 2009. From those surveys, 39 In-Q-Tel and 6 OnPoint companies returned completed surveys.

² In-Q-Tel, Form 990, 2007, available at <<http://foundationcenter.org/findfunders/990finder/>>.

³ Business Executives for National Security (BENS), *Accelerating the Acquisition and Implementation of New Technologies for Intelligence*, Report of the Independent Panel on the Central Intelligence Agency In-Q-Tel Venture (Washington, DC: BENS, 2001), available at <www.iqt.org/about-iqt/attachments/BENS%20Report.pdf>; G. Felda Hardymon et al., *In-Q-Tel*, Harvard Business School Case Study 8-804-106, available at <<http://cb.hbsp.harvard.edu/cb/product/804146-PDF-ENG>>; Wendy Molzahn, "The CIA's In-Q-Tel Model: Its Applicability," *Acquisition Review Quarterly* (Winter 2003).

⁴ In-Q-Tel.

⁵ OnPoint Technologies, Form 990, 2009, available at <<http://foundationcenter.org/findfunders/990finder/>>.

⁶ See <<http://devenci.dtic.mil/aboutus.htm>>; interviews with current and former DeVenCI employees, June–September 2009.

⁷ In-Q-Tel.

⁸ Army Venture Capital Initiative, Fiscal Year 2008, Annual Report to Congressional Defense Committees.

⁹ See <www.venturexpert.com> and <www.venturesource.com>.

¹⁰ For example, Nancy Y. Moore et al., *Enhancing Small-Business Opportunities in the DoD*, Technical Report (Santa Monica, CA: RAND, 2008), available at <www.rand.org/pubs/technical_reports/2008/RAND_TR601-1.pdf>.

¹¹ Committee for Capitalizing on Science, Technology, and Innovation, *Venture Funding and the NIH SBIR Program*, ed. Charles W. Wessner (Washington, DC: The National Academies Press, 2009).

¹² Data acquired from <usaspending.gov>.

¹³ Data acquired from <usaspending.gov> and <dodsbir.net>.

¹⁴ Ibid.

¹⁵ In-Q-Tel.

¹⁶ OnPoint.

¹⁷ Data from <www.venturexpert.com>.

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Government Actor as Strategic VC Investor? Parallels from the CVC World

A valid concern often raised when discussing government venture capital (GVC) programs is whether the government should be involved in such a highly competitive, private sector activity. Private VC investors are intensely driven by financial motivations, whereas GVC programs are primarily driven by strategic concerns. However, GVC programs are far from the only strategic investors in the VC marketplace. Many corporations have realized the potential strategic benefits of VC investing.

Academic research indicates that CVC parent firms reap palpable strategic rewards from their VC investments. For example, innovation rates (as measured by the number of patents) increase in firms that make CVC investments, particularly in the IT and devices sectors where GVC programs also tend to invest.¹ GVC efforts may even have an advantage over their CVC counterparts since the government is probably not viewed as a competitor and may have access to an expanded range of investments.² Additional studies suggest that at least in the CVC world, strategic-minded investors may actually outperform more fiscally motivated programs arguing that GVC programs may be well positioned for success.³ Finally, companies with CVC programs seem to have more success acquiring high-tech firms (in terms of stock market reaction to the announcement of an acquisition), possibly due to their knowledge of new technologies and innovative young firms.⁴

Of course, these findings may or may not apply to GVC programs. Indeed, there is some reason to be skeptical of government VC investors. Research on Canadian GVC efforts does not paint a promising picture. Canadian GVC-backed companies tend to lag the private market in initial public offering (IPO) rate, IPO value, and innovation rates.⁵ However, these programs invest quite differently from the U.S. GVC programs discussed in this paper, and it is unclear if parallels between Canadian and U.S. GVC can be drawn. The survey results presented here give some cause for optimism about the prospects of U.S. GVC investment.

¹ Gary Dushnitsky and Michael J. Lenox, "When Do Incumbents Learn from Entrepreneurial Ventures? Corporate Venture Capital and Investing Firm Innovation Rates," *Research Policy* 34, no. 5 (June 2005), 615–639; Gary Dushnitsky and Michael J. Lenox, "When Do Firms Undertake R&D by Investing in New Ventures?" *Strategic Management Journal* 26, no. 10 (2005), 947–965.

² Thomas F. Hellmann, "A Theory of Strategic Venture Investing," *Journal of Financial Economics* 27, no. 2 (May 2002), 473–521; Gary Dushnitsky and J. Myles Shaver, "Limitations to Interorganizational Knowledge Acquisition: The Paradox of Corporate Venture Capital," *Strategic Management Journal* 30, no. 10 (October 2009), 1045–1064.

³ Gary Dushnitsky and Michael J. Lenox, "When Does Corporate Venture Capital Investment Create Firm Value?" *Journal of Business Venturing* 21, no. 6 (November 2006), 753–772.

⁴ David Benson and Rosemarie H. Ziedonis, "Corporate Venture Capital as a Window on New Technologies: Implications for the Performance of Corporate Investors When Acquiring Startups," *Organization Science* 20, no. 2 (March 2009), 329–351.

⁵ James A. Brander, Edward J. Egan, and Thomas F. Hellmann, "Government Sponsored versus Private Venture Capital: Canadian Evidence," National Bureau of Economic Research Working Paper No. 14029, 2008, available at <<http://strategy.sauder.ubc.ca/hellmann/pdfs/Brander%20Egan%20Hellmann%20-%20NBER%20Final%20Version.pdf>>.

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