

**Statement of
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Committee on Homeland Security
Subcommittee on Transportation Security
“TSA Reform: Exploring Innovations in Technology Procurement to Stimulate Job Growth”
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Good morning Chairman Rogers, Ranking Member Jackson Lee and distinguished Members of the Subcommittee. I appreciate the opportunity to appear before you today and to share some thoughts about the Transportation Security Administration (TSA) and the important topic of this hearing.

Technology is a vital component of TSA’s mission and essential to its success. Congress has generously funded billions of dollars in technology for this agency over the decade following the attacks of 9/11. The topic of this hearing suggests two introductory, orienting questions:

- Can further innovations at TSA regarding technology acquisition allow the agency to reduce cost while improving security?
- Can TSA’s technology investments be structured to maximize job creation in these difficult economic times?

The answer to both is clearly *yes*. Tools to deliver budget reductions and better security are readily available. Moreover, with Congressional approval – and with *no* additional cost to taxpayers – TSA could also easily increase the number of jobs in America, and do so relatively quickly.

As a private citizen, I offer four recommendations for Congressional action that can significantly advance the objectives being explored by today’s hearing:

1. ***Authorize “alternative financing” operating lease agreements*** as proposed to TSA by public commercial airport authorities. These transactions would leverage private sector capital to acquire and maintain security technology for in-line baggage systems, checked baggage inspection, passenger checkpoint screening and potentially other needs.
2. ***Privatize the DHS’s Transportation Security Lab certification testing for explosive detection equipment***, as has been pioneered in the European Union.
3. ***Create TSA’s version of an “X-Prize” by replacing at least some of TSA’s traditional R&D equipment funding with results-based achievement awards***. Such awards can stimulate breakthrough innovations in checkpoint and checked bag screening, and better leverage private investment.

4. ***Insist that any new core explosive detection imaging systems (CT, AT, AIT and the like) sold to TSA after a reasonable date certain generate image data outputs in an open-source format.*** Additionally, require manufacturers to provide sufficient software transparency to allow ***TSA the option to develop modular, common-use aps for routinely upgrading explosive detection algorithms for its entire network of detection systems.***

What follows offers a few words about each of these recommendations. My purpose is not to explore any single one in great depth, instead to provide a high-level summary that can guide further assessment by the Subcommittee, if of interest.

Alternative Financing Agreements. TSA faces a formidable array of financial demands to fuel its critical technology needs. The single most expensive category of investment has been in-line checked baggage inspection systems. These investments clearly improve security and airport operations, diminishing delays and passenger inconvenience.

With each efficient in-line baggage system, TSA also typically generates meaningful cost savings for its own operation – for its capital budgets, because TSA purchases fewer explosive detection systems (e.g., EDS and trace detection) and for operational budgets because TSA achieves greater personnel efficiency, increased screening throughput, lower maintenance, fewer consumables and reduced energy consumption. These TSA savings often total millions of dollars annually, even at a mid-sized airport.

Although TSA has a large backlog of in-line checked baggage system projects that have been funded but not completed, there remains a large backlog of unfunded in-line system needs that will require more billions of dollars and many years to eliminate.¹ TSA has been chasing this backlog since 2002. In fact, some of the expensive projects initially funded by TSA must now regrettably be upgraded to accommodate today's requirements for higher speed screening technology.

Aside from in-line baggage system investments, TSA is also juggling numerous other formidable capital needs for technology. These include checkpoint equipment modernization, exit lane breach control (for which effective technology is available to allow reassignment of guards who now stand watch at exit lanes), risk-based screening infrastructure, credential validation systems, efficient physical security device management (for cameras, video recorders, door locks, etc.), multiplexing of threat detection imaging for more efficient and effective review remotely (TSA has recently published a Request for Information seeking technologies that can make this happen), and more.

¹ Congress and the Administration have allocated a great deal of cash to this problem, especially during the last two years. Yet the number of priority airports (TSA's Category X-III targets) that are still not fully funded remains large. TSA's FY 2012 *Congressional Budget Justification* reports that only 187 of the 286 largest airports (CAT X-III) will have CBIS systems completed for the entire airport at the end of FY2011 (p. A-23). The FY 2011 *Budget Justification* predicted that TSA would not reach 100 percent coverage even for the largest airports until 2018 (p. AS-30). Some airports lack capacity to fund projects effectively under TSA's current business model. Those airports are, in many cases, not yet even in the early stages of TSA's project funding queue. Moreover, several of the more expensive projects completed early after 9/11 have failed by a notable margin to meet the minimum throughput standards that TSA set for such systems (~400 bags per hour) and would need almost wholesale replacement to support even the currently certified medium capacity EDS machines, let alone the higher capacity EDS machines that could improve performance and further reduce TSA capital and operating expenses at those airports.

For the next several years, TSA's capital budgets will face a particular squeeze in order to recapitalize its first-generation EDS machines and related technologies, which are now reaching the end of anticipated service life. It is simply not practical to fund all of TSA's needs with a business model that continues to ask Congress to write such large checks. Yet absent investment, better security, greater efficiency, TSA cost reductions and customer service improvements will be deferred.

Alternative financing can and should play a role in meeting TSA mission needs. There are multiple business models that work, and there will be many airports willing to engage with TSA creatively, if allowed. These solutions don't require complex tax code changes or exotic and risky financing structures. They would simply leverage the way airports for decades have done business.

But to jump-start this common-sense investment, Congress must authorize TSA – even better, instruct TSA – at least to experiment in adopting alternative financing transactions. By legislatively cutting through one or two project scoring nits that are perceived by TSA staff to be impediments, Congress can make it possible for TSA to negotiate operating leases for security technology, just as TSA does today with regard to leasing office space and obtaining other essential services from airports nationwide. TSA authorizing legislation would simply recognize and affirm the unique dependencies that exist between TSA and airport authorities, allowing government-to-government alternative financing transactions to be funded, especially at today's unprecedented favorable rates.

Sensible alternative financing can literally attract billions of dollars of investment from the private sector. Not two or three years from now. Now. This approach can facilitate many airport in-line baggage system improvement projects, which can easily be completed at lower cost and in less than half the time required to complete an identical project funded with TSA's existing procurement model. Putting Americans to work and supporting TSA's mission. I'll give a quick overview of one approach with which I have been personally involved.

In September of last year two airport authorities – supported by Delta Air Lines, Southwest Airlines, the Vic Thompson Company (arguably the leading U.S. engineering firm specializing in aviation security project work) and my firm – formally proposed two alternative financing lease agreements to TSA. We had others ready to follow. These first two transactions together offered an estimated \$198 million in private sector investment to design, purchase and maintain in-line baggage systems, explosive detection equipment and checkpoint modernization technology.

As proposed, at each airport the airport authority would make the screening technology and infrastructure needed by TSA available to the agency through a multi-year services agreement (the proposed term was eight years). Screening systems currently operated by TSA (or regulated in any way by TSA) would, of course, meet all TSA performance standards, relevant equipment certifications and operational requirements.

The two transactions were part of a proposed new pilot program of security investments, which the offerors called the *Next Stage Investment (NSI)* program.

NSI does *not* contemplate any change regarding existing operational roles and obligations at the airport. TSA would, for example, still be responsible for operating or overseeing private sector operations regarding checked bag and checkpoint screening. By pilot testing an alternative to TSA's existing buy-own-maintain business model, TSA can gain remarkable advantages, while preserving all of its inherently governmental discretion and operational control.

The NSI program is not an ordinary commercial enterprise; rather, it is a government-to-government agreement that leverages private sector skills in support of a compelling public interest. NSI can substantially improve aviation security – and do so much more quickly, at a lower project cost and more comprehensively than can be achieved using TSA’s existing business model for infrastructure investment. The offerors are convinced that their alternative financing pilot program provides a compelling value proposition for TSA and the aviation industry.

NSI would generate well-paying jobs and other near-term economic activity with its technology purchases, project design, construction and private sector program management. Monthly fees to be paid by TSA under the services agreement would not begin until after system acceptance. In other words, NSI transactions would truly be quick-start projects. Because TSA does not have to obligate funds up front to get a NSI project off the ground, they offer a very efficient way to reduce the backlog of TSA project needs without imposing on Congress for large capital budget appropriations. And a way to pilot test technology innovations of all sorts.

The offerors can prove that the proposed NSI projects are sound financial investments for TSA – reducing overall project costs, decreasing the number of TSA employees needed for ongoing screening operations and reducing overhead costs at TSA headquarters. NSI projects can considerably reduce TSA’s dauntingly large backlog of near-term technology investment needs. And they can smooth investment spikes and increase flexibility to pay for what will otherwise be large capital budget needs for years ahead. Many of the savings achieved drop straight to TSA’s bottom line, generating annual saving each year ahead.

Such alternative financing tools can help DHS and Congress balance the need to reduce federal budget outlays while meeting DHS mission needs. The NSI and other alternative financing approaches proposals therefore raise transactional *policy issues* that are strategically significant for the long-term success of TSA and to DHS overall. *In sum, the NSI program constitutes a potentially transformational business model for acquisition and maintenance of aviation security technology.*

So what happened with the two proposals? TSA staffers reviewed them and decided that the transactions would have to be scored as a capital lease rather than an operating lease, thus making the transaction unworkable. This was based on a conservative interpretation of OMB Circular A-11 (Appendix B), one that I would invite Members to review. However, a simple legislative waiver allowing TSA to accept proposals for such transactions would, I’m convinced, unlock very considerable benefits for TSA.

2. Privatize the DHS’s equipment certification testing. The process within DHS for providing certification testing for explosive detection systems needs re-thinking. Today, the Transportation Security Laboratory (TSL), a part of the DHS Science and Technology directorate, conducts such certification testing for TSA. A legacy FAA organization, TSL is home to many highly talented individuals, men and women who do work that is essential to DHS’s mission. Certification testing is not a task that needs to remain on their plate.

The current process is unnecessarily expensive, both for the taxpayers and for vendors seeking certification of devices. It is excessively time-consuming and the process for obtaining approvals lacks clarity, transparency, resources and an adequate institutional capacity for working more quickly.

The gauntlet through which equipment manufacturers must navigate is dispersed to several different testing locations. Vendors must often guess at the requirements for success. If a firm is trying, for example, to get a new EDS machine certified it starts with something called certification readiness testing. Later, it ships a prototype machine to TSL's Atlantic City, New Jersey facility. There it undergoes testing with military and commercial explosives. Much of the actual work supporting certification is done by TSL contracted labor. In addition, the firm has to send another prototype to Tyndall Air Force Base in Florida for testing with more exotic and unstable threat materials. Tyndall then sends their data and images up to New Jersey for review. If successful, the applicant has to send a prototype machine for integration testing to a facility outside of Washington, D.C., and later elsewhere for operational testing in an actual airport environment.

If you fail at any stage (certification testing is appropriately binary; miss something on the extensive test-list and you fail), you pull out, try to fix the problems and ask for a spot in the busy queue to start over. In short, the process is unnecessarily bureaucratic – and a substantial impediment to innovation. I have spoken over the last three years with numerous successful venture capital investors who fund various security start-ups or early stage businesses. Most of them won't even go near any investment that has to end up subjected to this certification process. That's a market-driven recognition that this essential process is too much cloaked in mystery, delay and excessive cost. In short, too often the process unintentionally squelches innovation.

What would an alternative process look like? First, TSL and TSA would still be responsible for formulating and promulgating the performance standards that any particular class of equipment (AIT, checked baggage inspection, checkpoint bag inspection, trace detection, etc.) must meet. That is an inherently governmental task. Performance standard setting should be a collaboration that brings together technologists with TSA and DHS intelligence analysts. It is the military and intelligence community that is continuously gathering relevant field information. Getting enough clarity to outsource testing will almost certainly make for more rigorous, adaptable and transparent standards.

Then, DHS would design and conduct a procurement to select one or (ideally) two vendors. The winners would receive multi-year charters to establish integrated professional teams qualified to do the testing. There should be greater transparency about the performance standards for testing. Like an Underwriters Laboratory does in other areas. The National Labs, non-profits such as Battelle or MITRE, some university labs and various for-profit corporations have the basic program capabilities needed. The certification testing would be provided to industry on a fee-for-service basis. If the government likes, DHS could take half of what it currently spends on this task and buy down the retail testing cost with a subvention for the testing lab(s). Or take part of that cost savings and apply those funds to results-based achievement awards (see below).

With private lab, if a particular machine fails a test, it might not be necessary to withdraw altogether and re-schedule. Perhaps the same lab might also become a center of expertise that could help both fledgling entrepreneurs and established corporations improve the products. That's not appropriate or possible if DHS is doing the testing. It is a given that such labs would be appropriately trained and resourced, and routinely audited by DHS.

In the end, the testing lab would make a recommendation for a certification to TSA, which would still own that final decision.

This model has been adopted within the European Union (EU) and it works well. There are four E.U. labs that provide comparable certification testing in Europe – they are located in France, the UK, Germany and Holland. The latter two are privately-owned facilities.

Why is this important? Because the threats are real, and we owe it to TSA to put in place the best possible package of incentives to spur aggressive innovation by the private sector. A more efficient certification process should be part of such an incentive package.

3. Results-based achievement awards. Ten years into TSA’s life, it is worth the effort for Congress and TSA to engage in a fresh dialogue about how best to structure TSA’s research grant program for new technologies. To date, DHS has devoted considerable dollars to various development grants or R&D grants for firms working on what seem to be promising avenues of study. These grants kept some struggling firms in the hunt. Even still, only some TSA investments proved successful, others were duds.

Alternatively, I’m convinced that a results-oriented award program for winning technologies would offer more effective incentives, especially when paired with a more transparent and swift certification process. TSA needs the functional equivalent of a permanent X-Prize. This would offer a ring to chase, notoriety to be won and cash to be awarded if you are the first (or perhaps also the second) to obtain certification for a breakthrough technology.

If we had offered such a grant in 2008 or 2009 for an AT machine that accurately identified liquid explosives in a carry-on bag, the loathed “3-1-1 rule” might today be history.

These prizes would be meaningful only if they were rewards for taking security to a noticeably higher level, not for incremental change. A given prize should be large enough to constitute a reward and an incentive. TSA should pay more if the private sector delivers results faster. Achieving a TSA-endorsed goal might be worth a fixed amount if delivered in, say, two years. But perhaps twice as much, if delivered in one. I can imagine that a non-profit foundation might be formed with public contributions to support TSA by matching, for example, a given string of awards.

A prize would perhaps also help to re-align how investors in new technology view the homeland security technology market. In essence, this is simply a suggestion to look closely at how grant incentives are awarded today, and ask if they might, at least in part, be better based also on rewards for performance, not just promises.

I have no clue what Administrator Pistole’s lawyers or his procurement chief would say about whether TSA has the legal authority to do this. But if the specific authorization were to come from Congress, this Subcommittee would certainly be a good place to get the ball rolling.

4. Open source data, image standards and a TSA app factory. In an earlier life in the public sector, I became convinced that this final recommendation was potentially transformational. So I gave a speech about it one day at a large industry gathering. It quickly evoked a reaction from TSA’s technology vendor community: they hated it.

Members of this Subcommittee may get the same reaction. Still, I think it is worth insisting on this legislatively, in some way or another.

What is the basic recommendation? To give TSA the mandate to insist that any new core explosive detection imaging equipment (CT, AT, AIT and the like) sold to TSA after a reasonable date certain must compile its image data outputs in an open-source format (format to be determined). Moreover, the manufacturers should be required to provide such additional software transparency as required to allow TSA to develop and deploy modular, common-use apps that would routinely upgrade explosive detection algorithms in its equipment.

In July of this year the Government Accountability Office published an insightful report that is germane to this suggestion.² It explains the extraordinary complexity of the job of implementing needed configuration management and software upgrades for TSA's inventory of EDS equipment and other screening devices, such as electronic trace detection. There are at least two big parts to this problem. The first is keeping up with what is known about terrorist bomb-making innovations. Of course, TSA has the ongoing obligation to convert intelligence about those threats into equipment performance standards and operational protocols. But the second problem is that all of TSA's explosive detection equipment runs with proprietary software, which TSA has virtually no ability to control once it has bought one of these long-life tools.

So if TSA needs a specific software change, they are at the mercy of getting it from a welter of original manufacturers. I'd vouch for that community to say there is an enormous reservoir of professionalism in the manufacturing community. And a commonality of interest. But not perfect alignment. TSA is more or less at the mercy of each manufacturer of its legacy screening equipment to design and implement system modifications as needed. Of course, TSA is expected to pay for any such changes. The changes themselves and the costs are usually not trivial. The GAO report shed light on some of the problems regarding this process, both at TSA and among the vendors.

These circumstances are not unlike what existed with owners of cellular phones prior to introduction of the iPhone, and later its competition. By making the core software that ran these gizmos open-source, Apple empowered individuals with specific interests to write their own apps. And when a lot of people wrote apps, those innovations began to cascade, redefining what was possible and therefore what tools users could expect. In recent years, the medical community has made a similar, dramatic progress in standardizing software protocols for essential diagnostic and business tools.

TSA finds itself with identical needs with respect to their imaging technology providers. Changing the status quo would not be easy, but dividends are large. In each case, the software component of a given machine is a vendor's secret sauce. So that makes for an untidy stew at TSA. On the other hand, if there were greater openness and standardization with software across these systems, that would enable greater flexibility and creativity. It would allow TSA to retain an outrageously talented team to do configuration management and to support innovation, matching the pace of threat changes in the real world. This would take a bit of time and a lot more detailed planning, but again, it would offer a transformational responsiveness and strengthen homeland security.

In close, I'd like again to thank the Members of the Subcommittee for affording me the time to present these four ideas. Taken together, they constitute a cluster of tools that could give TSA remarkable new capabilities to spur innovation, acquire and utilize technology and create economic opportunity.

² United States Government Accountability Office, *Aviation Security: TSA Has Enhanced Its Explosive Detection Requirements for Checked Baggage, but Additional Screening Actions Are Needed* (Washington, July 2011), GAO-11-740.