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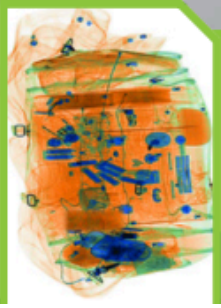

DECEMBER 2019 / JANUARY 2020 VOLUME 25 ISSUE 6

A Personal View

expressed by Steve Wolff

Let's be honest, AVSEC screening technology has stagnated.

CT technology was first deployed in the early 1990s and body scanners appeared in airports ten years ago. In the meantime, other industries (automotive, electric vehicles, space exploration, software, and medical technology, to name a few) have innovated at rapid rates. So why hasn't AVSEC? I believe it stems from how we develop, mature and roll-out new technologies.

Innovative ideas or technologies generally come from innovators who are driven to form start-ups. Companies like Apple, Google, Amazon and Facebook started in home garages, and it took a financial leap-of-faith to put these companies on a path to becoming today's world-spanning enterprises; rarely can large companies achieve this. As the saying goes, "Small companies innovate, large companies integrate". Sure, they'll release product improvements (737 Max, anyone?) to preserve or expand their current products' market share, but they have minimal incentive and too much bureaucracy for the fast, almost desperate pace needed for new, novel technology development. If large companies later see a threat from small innovators, they'll buy – and often bury - them.

Privately funding AVSEC technology is a hard sell these days. Venture capitalists look for the next Uber or Facebook with 'sky's-the-limit' potential markets, and prefer software-only companies to those with risky and costly hardware. This leaves government funding, which seems well suited for AVSEC technology development but, let's do a reality check; governments are, by nature, conservative, so often distrust 'wild', innovative ideas. They typically (especially in the US) have burdensome, lengthy proposal/award processes, sometimes taking years before a decision, and there's a low award probability for new applicants. For start-ups to survive in the interim, they fund what progress they can from retirement funds, friends, family and angel investors, making glacial progress compared to what they could accomplish with even small government grants. I've been amazed at what a small company can do for US$100,000 (c. £75,000) without that big company overhead. However, it's the well-established companies with staff, good government connections, refined proposal-writing skills and history that seek - and get - most government funding, even though they can fund their own R&D if there's a healthy market (although that's a different story).

Here's an example from one client, new to our industry, who was used to the fast-paced telecomms business cycle and sought a DHS Long Range Broad Agency announcement (LR BAA) grant. After submitting a white paper and waiting over a year, the CTO got a positive response but then gave up. When I asked why, he said, "I extrapolated; if it took over a year to hear about a 10-page document, a 50+ page full proposal would take over five years! We'll either have done the work and be ineligible for the funding or be out of business by then, and I'd have to pay you to write it!" He's not alone, other ex-clients new to the process have taken over three years to get a DHS award. So, what to do?

1. Restructure government R&D grants to consist of more frequent, smaller awards, with a higher success probability and less bureaucracy. These should be targeted at micro-companies with innovative, perhaps riskier technologies that really need the cash, government introductions and support. This shotgun approach would be good value for governments, as they'd be paying directly for research rather than covering large-company overheads. A good model for this is the UK FASS (Future Aviation Security Solutions) process.

2. Governments should proactively seek out new small companies rather than wait for announcement responses. DHS S&T's Silicon Valley Innovation Program does this via nationwide tours and briefings, but it should be expanded beyond IoT and cybersecurity to include other innovative technologies with potential AVSEC value.

3. Streamline the application/award process. Micro-companies lack people and time to write encyclopaedic proposals. DHS S&T wisely improved the front end fast-review process for its latest BAA, but still requires two to three space- and time-consuming volume tomes for the full proposal. The UK process is more efficient (and DHS CBP effectively used a similar process for its recent Opioid Detection challenge) with simpler, less verbose submissions and less than three months to award. Also, when companies fail, they're told why - critical education to help them with future submissions.

> **"...no innovative scanning technologies in the past 10 years and an industry dominated by a decreasing number of huge enterprises with no incentive for innovation..."**

4. Fund the 'Technology Readiness Levels of Death' (TRL 5-8); those test/evaluation phases that sit between R&D (where there are funding options) and deployment (i.e. sales revenue). Since the 2000s, getting through testing to deployment has become much more bureaucratic, time consuming and costly. In the 1990s, the US had a costly-but-manageable (to smaller companies like InVision Technologies and Ion-Track) 4-step, 2+ year process for HBS technology. This has evolved, at last count, to a mind-bending 8-step, 5+ year qualification gauntlet. There's no government funding to navigate these TRLs as it's 'just engineering', making them a severe obstacle to all but the largest players.

The results are clear: no innovative scanning technologies in the past 10 years and an industry dominated by a decreasing number of huge enterprises with no incentive for innovation. If we want new technologies moving forward, let's rethink how we nurture small, innovative micro-companies to overcome underfunded R&D, zero-funded 'TRLs of Death' and grow so we can grow some Apples and Googles in AVSEC. ■

Steve Wolff has 34 years' experience developing and marketing advanced security scanners based on X-ray, radio frequency and neutron inspection technologies. His 16-year-old consultancy has helped over 50 worldwide clients with development, trials, government and industry outreach. Previously, he was V.P., Marketing & Engineering for Quantum Magnetics and InVision Technologies (both now Smiths Detection). In 2010, he led IATA's risk-based Checkpoint of the Future visionary team. He is a 15-year Editorial Advisory Board member of Aviation Security International, and peers voted him Vice Chair of the first Concealed Explosives Detection Workshop in 2016.