Good Ideas are not Adopted Automatically

William "Bill" Johnson

"Good ideas are not adopted automatically. They must be driven into practice with courageous impatience. Once implemented they can be easily overturned or subverted through apathy or lack of follow-up, so a continuous effort is required." — Hyman Rickover

28 minutes before midnight on 1 November 1997, the Navy completed system development certification testing of a new submarine sonar. This new sonar was considered central to achievement of the USN submarine force's goal to "regain" what was termed "acoustic superiority" against adversaries who had made progress in SONAR capabilities, an area where previously US submarines were superior. Incidents on deployments and subsequent analyses of collected data made clear that, without radical change, US submarines no longer were assured of maintaining tactical control against their more advanced adversaries. The first edition of this new sonar was developed in only 18 months and installed on the USS *AUGUSTA* the following month under the leadership of Captain (later RDML) Jack Jarabak. Development was a collaborative effort between the long-time submarine sonar prime contractor and a newcomer small business which had recently been awarded a Small Business Innovative Research (SBIR) contract to develop and build a "multi-purpose" signal processor based on commercial technology. The small business was contracted with directly by the Navy. Previous developments of similar capabilities using "militarized" technology had taken as long as 6 to 8 years with cost overruns, performance shortfalls, and schedule slips commonplace. For the new sonar, contracts for both companies were written to incentivize meeting cost goals, system performance, and on time delivery. Cost, performance, and schedule objectives for this first phase were met with 28 minutes to spare.

"If you starve in the wilderness, it is because you are tired of living"

--George & Jacques Herter

By 1994, submariners realized that they had lost more than superiority. Submarine research and development was being funded at roughly a quarter of levels we'd become accustomed to prior to the fall of the Soviet Union. The "peace dividend" had become a "fact-of-life" …a fact the acquisition community was reluctant to accept. The mantra was "all we need is more money." The actual "fact" was that submariners needed immediate results… and we, in the acquisition community, needed a huge cultural change. We had assumed that radical improvements in performance, cost and schedule were not possible under the then current budget constraints. We were wrong. Our first step was to take ownership of the sonar. Of course, we had, in theory, always "owned" the sonar. In practice, we did not. Our prime contractor had been given license to perform the duties of ownership with oversight by the Navy. It was the Prime's call on how work was accomplished whether in-house or subcontracted out, what the cost would be, and whether the schedules could be met. The Navy provided "oversight" but little in the way of alternatives.

In the new sonar development, the Prime contractor was an integrator working in a collaborative arrangement with hardware and software vendors. Previously these vendors would have operated under contract to the Prime. In the new set up these independently funded 3rd parties would be responsible for working with the prime to ensure that their product was integrated properly into the sonar system. Contracts for both the Prime and 3rd party contractors stipulated that recognition for success at system certification be for all parties, or not at all. We would succeed or fail as a team.

Our objectives were to (1.) improve performance faster, (2.) deliver additional improvements when required, (3.) make improvements available to all classes of submarines and (4.) implement an open system based on commercial-off-the-shelf technology. A key part of our strategy was to save cost by leveraging products developed by others. It was clear that the gaming market was rapidly outstripping what we had long ago developed in our "militarized" processor-centered systems. We also decided to collaborate with Navy's Surface and Surveillance communities who were dealing with acoustic superiority issues as well. Finally, we set goals that needed to be met but seemed impossible at the time. Within a very short period of

time, the submarine leadership was onboard with this vision and was committed to following it through. We, in the acquisition community, jumped into this transformation with both feet. More importantly, we had the discipline and courage to stay the course. We lived within our parameters and executed. At times this was exceedingly difficult since many in both the government and industry sectors felt threatened by the new "open" approach.

We had opened the solutions aperture to include ONR, DARPA, many other small businesses, academic institutions, and the fleet operators themselves. Decisions on inclusion of ideas and products were based on data driven analyses which had been "peer reviewed" by the technical community. We had designed the sonar to have the ability to collect data from actual deployments. This data was crucial to understanding sonar performance and the impact of proposed changes. The aim was to level the playing field and remove any politics or business bias from the equation. The "open architecture" and "open business" approach provided the Navy with alternatives that were not previously available.

Those of us at the execution level felt a profound sense of accountability to the submarine sailors. Success, or not, in regaining acoustic superiority was squarely in our court. We did not sit around making excuses for where we were. We all knew that there would be no excuse for not providing much better stuff for those deploying in harm's way. We were depended upon to deliver, and we did. Although our Acoustic Rapid Commercial Off-The-Shelf Insertion (A-RCI) program won many awards and recognitions, the greatest reward for those of us who had to deliver was the praise we received from operators fresh off deployment. The new "open" processes provided everyone the opportunity to see ourselves in the solutions…the praise was taken personally. A new culture was formed.

The A-RCI approach was to become the "poster child" for acquisition reform in the Navy and elsewhere. At its 8-year anniversary, A-RCI had been installed on more than 50 submarines with at least 4 generations of hardware and software upgrades. At 10 years, according to an internal study comparing the observed costs over the 10-year previous legacy period, there was a cumulative cost reduction

of one-sixth for development and one-eighth for operation and support. The National Academy of Sciences recommended that the USAF adopt several A-RCI tenets in its approach to improve the speed, effectiveness and innovation when developing capabilities to accomplish its missions in air, space, and cyberspace. The National Academy of Medicine used it as an example for dealing with the rapid improvement introduction of digital technology into all aspects of health and health care.

My vision for OA isn't limited to systems built to a set of open standards, but rather it is focused on open business models for the acquisition and spiral development of new systems that enable multiple developers to collectively and competitively participate in cost-effective and innovative capability delivery to the Naval enterprise.
-- CNO ADM Mike Mullen

Sadly, the methods A-RCI pioneered, while spectacularly successful in delivering acoustic superiority for submariners, have only been grudgingly adopted by the rest of the Navy's acquisition community. Outside the submarine community, real progress towards a truly open approach has been painfully slow. RADM Jim Shannon, a Surface Warfare Officer (SWO) and former leader of the Navy's Open Architecture initiative, and Nick Guertin, who worked for DASN RDT&E, raised the level of "OA" awareness to unprecedented levels within the Navy. They delivered wonderful management tools in the form of contracting guidance, software repositories and DSMC on-line courses. Shannon also pioneered OA in the initial development of the Naval Integrated Fire Control-Counter Air (NIFC-CA) system of systems. Over a decade later, it has been only recently that the Program Executive Officer for Integrated Warfare Systems (PEO IWS) has embarked on an initiative to really "open" the AEGIS combat system which has been under criticism for decades for its inability to change as a result of its monolithic architecture and business practices.

...the secret sauce that is required to make something like this (A-RCI) work. It's leadership and great people to make it a success. An iron fist to make sure no one messes with the budget over an extended time is the third element.
-- ADM Edmund P. Giambastiani, Jr.

Ability to work effectively in an enterprise system is fast becoming a measure of success in the commercial Information Technology (IT) world. The Navy is ideally suited to become an enterprise hub seeking to attract the best this country and our allies have to offer. However, the Navy remains bound up in organizations, processes and a culture that were not born in an enterprise manner. Clearly today's acquisition system is not adequate for dealing with the cross-boundary issues that arise when trying to get results at the "enterprise" level. The Navy's acquisition ecosystem has evolved to produce things that can be defined, bounded, and counted. For the most part, yesterday's requirements were fairly stable and well understood. Measures of success and failure were clear cut. Accountability could be established. Organizations with clear lines of control could be chartered. Technology options were relatively few. Today, success with ideas like "network centric warfare" and "Distributed Maritime Operations" requires skill sets involving collaboration and ability to deal with fuzziness and things we can't directly control. The government must exercise care in helping to protect 3rd parties from predatory behaviors in both government and industry. Leading in an enterprise manner puts a premium on skill sets that were not particularly valued before. What are the barriers to success in this enterprise world and how do we improve in dealing with them? I submit there are two that deserve more attention…leadership and transparency.

Leadership

Frank Ostroff, an expert in government transformation and author of the Harvard Business Review article "Change Management in Government", shared the following observation with me. He says that, assuming the desired change is right and legitimate, only 25% of the organization will typically embrace the desired change at the onset. 25% will be recalcitrant and resist. The remaining 50% will sit on the fence and look to see who wins. A key to success is in the actions and involvement of the leaders. In my view, the "elephant in the parlor" when it comes to fixing Navy acquisition is leadership...leadership at all levels. "Leadership" commonly makes the short list of issues regarding how to deal with Navy problems. However, practical recommendations on how to find and nurture "change agents" are scarce as

hen's teeth. Perhaps this is because it can be viewed as an indictment of incumbents and specifics hit too close to home. I agree with the commonly stated notion that the Navy needs to operate with processes that are "repeatable with ordinary people" but, when pioneering, we are not repeating. We are blazing new trails. To change a government/industry culture that is out of tune with today's needs and solutions, we must have extraordinary leaders…especially where the rubber meets the road at the Program Manager level.

How often has a leader of a successful and innovative program attributed part of its success to the ability to "fly under the radar?" That is a recurring theme that most of us have experienced first-hand. Once it becomes apparent that real transformation is a possibility, many in the incumbent ecosystem feel threatened. A few may become early adopters and risk the move forward. Most, in my experience, go limp or initiate "corrective" action. In this, they can be very artful. Careers of those leading the change can be easily ruined. In a survey given to a group of government and industry pioneers of the ARCI Program, the number one barrier to change identified was "fear of change." It's not only the unknown that is feared. It is also the real possibility that they will, in the end, be marginalized with no place in a system that has maintained itself. The risk to the individual and organization is one of self-preservation. The risk for non-action to the warfighter and Nation is, regrettably, taking a back seat.

Recommendations Related to Leadership:

1.Identify "pioneering efforts" and recognize success appropriately…in both government and industry. This is one of top management's most important jobs. Top managers must be involved hand-in-glove with the selection, protection, and rewarding of these pathfinders. Folks with the requisite skills are a very precious asset…especially for a community that must change its culture. We cannot afford to lose the leaders with the energy, skills and courage required to lead transformation. If this happens as the result of lack of proper recognition, it's a big red flag to those sitting on the fence. If this happens, top management needs to be held accountable.
2.Require all-sources competition for all senior government positions (GS-15 and above). I've met a number of extremely talented people

in industry who would take a pay cut to lead a government program if it had the potential to make a real difference. This will send a clear signal to underperforming or otherwise recalcitrant civil servants that alignment with the spirit of the transformation matters in a personal way.

3.The career civil service is a comfortable place to be. It is too comfortable…. especially at the senior levels. Accountability with teeth needs to be put in place. Institute mandatory 360-degree evaluations for the SES community. Do not limit this to only those in acquisition jobs. Many on the periphery have the power to obstruct progress. These evaluations must be connected with the strategic aims. One of these aims should be better coupling with the warfighter. The operational forces should have a place on the rating panel…as should successful pioneers. Be prepared to weed out those who are simply maintaining their empire or resting on their laurels. This will require planning and expertise not resident in the government. Do not turn the fox loose in the hen house on this one.

Transparency

Amazon's CIO once remarked "the leader has to have and understand the vision." In the DoD, the leaders with vision come and go. Their buzz words occasionally remain. One of the keys to our success in the Submarine Domain was that we kept the message simple, jargon free and CONSISTENT. What made the message real was real information…details of the architecture, performance successes and shortfalls, time frames, budgets. It was not a fuzzy concept left to the student to figure out. Industry could see exactly where and when the opportunities would arise and where their products and talents would fit in the big picture. The 2nd Class Petty Officer on deployment had confidence that his ideas and feedback from that experience would be significant in the crafting of a planned improvement to deliver in time for his next deployment. If not, he would know the reason why. The S&T engineer could see the results of his efforts from the engineering measurements analysis on data collected in recent deployments. The details were made available to all within the limits of security.

Recommendations Related to Transparency:

1.Include the operational warfighters in the system design process. They are the most knowledgeable regarding what new capabilities are required. Increase the velocity of system changes so that fleet operators see tangible benefits to their ideas. The goal should be to provide feedback and gratitude to the Fleet for their suggestions. They will become strong program advocates who create a demand pull for performance improvements.
2.Establish a performance meritocracy in which candidate technologies are evaluated with common metrics and common data (open and closed). Utilize "peer review" groups to oversee the evaluation process. Establish a culture that understands decisions are to be made based on data driven analysis resulting in a level playing field for all. Select "peer review" members formed of experts from government, industry (including competitors), and academia. Remember the axiom…"no one organization knows all the answers."
3.Require roadmaps that provide real information on capabilities, resources, timeframes, and options. Keep them current and make them available to the entire community.

My point here is that I strongly believe the fundamental barriers to tech transition have much more to do with leadership and culture than the processes or policies. Concentrate on fixing those. DoD 5000 and the law can be changed for the better perhaps but are not really significant obstacles for doing what's right…right now. From what I have seen and read of today's successful commercial ventures, this idea is certainly well understood outside of Navy and DoD. Focus on identifying, rewarding, and protecting leaders with the energy, skills and courage required to lead this transformation. Let folks operate on real information…not buzz words. How this should be done is something all of us ought to tackle.

Author Biography

William M. (Bill) Johnson is an independent consultant and plank owner of both PEO SUB and PEO IWS. Bill was the civilian leader of submarine sonar programs from its inception thru the first seven years of its introduction to the fleet. He is a graduate of Cornell University (BS in EE'70, MEE'75) and the Harvard JFK School of Government (SONS'94). He has been recognized as a Distinguished Civilian by both the Naval Submarine League and the Navy.

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