

Mr. Brian Stauffer

APHSS Fellow

Michigan State University

Mentor Thomas A. Cellucci, PhD, MBA

Chief Commercialization Officer

U.S. Department of Homeland Security, Science and Technology

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First off, I would just like to thank everyone who made this unique and prestigious opportunity a reality for me and all of the other fellows. I would most like to reiterate my gratitude to the CIBERs and all of the mentors who dedicated their time and efforts to helping everyone get the most of out this experience.

My mentor for the 2008 Homeland Security Summit and Exposition was Dr. Thomas Cellucci, Chief Commercialization Officer for the Department of Homeland Security's Directorate for Science and Technology. The panel to which I was assigned was *Emerging Technology for the Department of Homeland Security*, with Dr. Cellucci as the moderator, and the panelists were Mr. Eric DeMarco, (President and CEO, Kratos Defense & Security Solutions, Inc), Major General John S. Parker, U.S. Army (Ret) (Senior Vice President & Chief Medical Officer, SAIC), Dr. Katherine J. Herrick (Program Manager, Raytheon Company), and Dr. John C. Stammreich (Vice President of Global Strategy, Networks and Space Systems, The Boeing Company).

The reason I chose this particular panel is due to its practical applications to my field of study. As a business major, discussing applied science and technologies with executives from major companies not only interests me, but is a benefit to my future as well. The major thing I learned from the panel, and also from the entire summit, was the relationship the Department of Homeland Security has with the American public and private sectors. It is the bridge between the military priorities of the country and the interior development goals. The same technologies can be used in both peacetime as well as during military offenses. One thing I learned specifically from my panel was the relationship that smaller companies have with behemoth ones in the industry. The typical process involves a smaller company filling a particular gap, often times combining up-and-coming talent and ingenuity with the capital and resources from the larger firm. This periodically will lead to mergers and acquisitions, thus continuing the cycle. The final concept I learned during the panel was the government's role as a consumer in the entire process. Businesses cater to the government's every need, thus establishing a symbiotic relationship. With the government being the primary consumer (or sole consumer in some cases), the marketing and engineering professionals from the private sector must establish a relationship with the government as they would with any civilian consumer.

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The biggest applicable piece of advice I gained from the panel, and from the summit as a whole, actually came from my mentor, Dr. Cellucci. As the Chief Executive Officer for a number of different companies, and now currently the Chief Commercialization Officer for the Department of Homeland Security, Dr. Cellucci is quite familiar with the practical, commercial applications of technologies. During one of the opening sessions, he made the point to the entire fellows that scientists and business professionals often come prepared with solutions looking for problems. So often we develop technology without defining our end goal, and the result is vast amounts of wasted resources and inapplicable scientific developments. The solution is to identify and isolate a particular problem and then outline a number of different steps to be taken to address and correct the shortcoming.

One of the programs Dr. Cellucci shared with me was the Operational Requirements Document that the Department uses for the solving of all problems. The Operation Requirements Document begins with the broad strategic goal, and then works down into a mission, a need, and finally the very specific operational requirement. At the request and suggestion of Dr. Cellucci, my paper will include a very brief Operational Requirement Document, serving to galvanize what I have learned and help me to apply it to my own field of supply chain management.

The example the Department of Homeland Security uses in its outline of Organizational Requirement Documents is from the Transportation Security Administration. The Requirements Hierarchy for the example includes both the Operational Requirements (problem identification), as well as Technical Requirements (continually narrowed and specified solutions to the problem). Operational Requirements are written without any preconceptions of applicable technology or solutions; they are merely for problem identification. As soon as any progress is made as to the solving of the dilemma, the Technical Requirements are specified. The example from the TSA is included below:

Operational Requirements

DHS Mission – Strategic Goals (“Prevent terrorist attacks”)

TSA Mission (“Protect traveling public”)

Mission Need/Capability Gap (“Reduce threats to traveling public”)

Operational Requirement (“Capability to detect firearms”)

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Technical Requirement

Performance Requirement (“Metal detection & classification”)

Functional Specification (“Detect metal > 50 gm”)

Design Specification (“MTBF > 2000 hours”)

Material Specification (“Use type FR-4 epoxy resin”)

After the creation of the Requirements Hierarchy, the Program Manager for the project must prepare the actual Operational Requirements Document. This document includes the eight subject subheadings of General Description of Operational Capability, Threat, Existing System Shortfalls, Capabilities Required, System Support, Force Structure, Schedule, and System Affordability, as well as any related information or vocabulary necessary to understanding the document.

My Operational Requirements Document will resemble that of the TSA, as I chose to also use the Department of Homeland Security’s Mission of “preventing terrorist attacks” as my Strategic Goal. Additionally, my Requirements Hierarchy will only include the Operational Requirements, as no research can be conducted to properly discuss any Technical Requirements. To this end, I will merely be identifying a problem (as would the DHS), as another party would work to identify the solutions. Finally, I will explore one of the eight subjects that a full ORD would contain.

Strategic Goal – Prevent terrorist attacks

The Strategic Goal is always the broadest, most far-reaching part of the ORD. It establishes no guidelines or preconceptions of any sort, nor does it even identify a true problem; the Strategic Goal serves to designate the ideal of the organization.

I chose to mirror the Strategic Goal of the TSA, “preventing terrorist attacks”. Terrorist attacks are more of a general, perpetual threat than a specific, isolatable *problem*. The Strategic Goal sets up the dissection of the problem, and provides a paradigm with which to approach that problem. Other examples of Strategic Goals could include “Improve the nation’s infrastructure” or even “Decrease smoking related illnesses”.

Supply Chain Management Mission – Make shipping ports safer

Whereas the TSA’s Mission was to protect the traveling public, my mission will be making shipping ports safer. The Mission takes the broad, far-reaching ideal (preventing terrorist attacks) and

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settles it into a particular field, in this case, the field of maritime shipping. The Mission still does nothing to actually attempt to develop solutions; it is in fact still defining and clarifying the problem.

Mission Need – Reduce shipping of harmful goods

The next level of the problem, the Mission Need, I stated as the desire to reduce the shipping of harmful goods. Any number of different Mission Needs could have been selected based off of the Mission and Strategic Goal, including “reducing possibility of attacks on ports” or even “reduce illegal human trafficking”. By limiting the scope of the problem to merely addressing the shipping of harmful goods, the organization (in this case the Department of Homeland Security) is better able to actually address the problem. Too often organizations don't focus on specific enough parts of a situation, and thus apply too vague or broad of a solution, decreasing their effectiveness.

Operational Requirement – Be able to detect harmful goods inside shipping containers

The final point in the Requirements Hierarchy is the Operation Requirement. As the final step before the organization actually begins to explore solutions (the Technical Requirements stages), the Operation Requirement must be extremely specific. In essence, it is an extension of the Mission Need, which expands on every previous step. I chose the ability to detect harmful goods within shipping containers as the Operational Requirement. This is the logical next step, considering the Mission Need of reducing the shipping of harmful goods. While other Operational Requirements are possible (including checking dock workers for smuggling of harmful goods), they do not present as credible or real of a threat.

Now that the Operational Requirement has been determined and the problem has been outlined, the next step would be exploring possible solutions. A conceivable set of Technical Requirements would possibly include radio-frequency identification, portable x-rays, or even manual human checks. The main point of the Operational Requirement Document is to come to these conclusions (the solutions) naturally, rather than attempting to force the use of any new or preexisting technologies to meet a problem.

Of the eight subject subheadings of an Operational Requirement Document, I will be focusing on the third one, Existing System Shortfalls. This subject is defined below:

“3. Existing System Shortfalls

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Describe why existing systems cannot meet current or projected requirements. Describe what new capabilities are needed to address the gap between current capabilities and required capabilities.”

One of the ways this section could be approached would be to make a list of all failures or shortcomings of the current system, and then find commonalities among those failures. In the chosen example, potential shortcomings would include the inability to check every single container entering a port, the inability to detect certain items or substances using current methods and technologies, and the increased time and costs of shipping due to the current search process. The problem may not even be technologically dictated. Perhaps the problem is due to too small of a workforce for the job, or not enough of a particular type of equipment. This once again supports the need to determine the problem before developing a solution. It would be ineffective to attempt to implement a system of rfid's if the problem is merely a labor shortage.

These subjects are not a cut and dry, linear process; the eight subjects are addressed and considered at every step in the solution of a problem. They are prepared in the Operational Requirement Document in this manner so that users can quickly analyze the situation in hopes of potentially solving the specified problem.

The Operational Requirements Document is the final step of the Department of Homeland Security, before private industries can take over. As mentioned before, these private companies serve the needs of the DHS (and other government entities), and those needs are very specifically outlined using ORDs. ORDs prevent companies from attempting to sell the Department useless or irrelevant technology, and at the same time benefit those companies by stating very specific needs that can be addressed.

Operational Requirement Documents are not limited to use within the Department of Homeland Security, or even the United States Government for that matter. Businesses, nonprofit organizations, and even university clubs can all utilize the lessons and procedures outlined by the ORD: always determine the problem you are trying to solve first, then take the necessary steps to correct it.