

## Defense New realities, innovative response



Image Credit: Boeing SolarEagle



# Introduction

Three retired General Officers from across Deloitte LLP (Deloitte), having a combined background of 105 years serving in the U.S. Air Force and U.S. Army, recently came together to discuss the critical issues facing the Aerospace & Defense industry.

Their experience as users of the technologies and now in their current roles as providers of those technologies gives them a unique perspective. These former General Officers have a good understanding of war-fighter requirements, the challenges and issues with weapons system development and deployment, and the difficult tradeoffs between affordability, functionality and requirements.

General (USAF ret) Chuck Wald last served as the Deputy Commander of U.S. European Command, and also served as the Air Force component commander who subsequent to the events of 9/11, planned Operation Enduring Freedom. Lt. General (USAF ret) Harry Raduege last served as the Defense Information Systems Agency Director and as the Commander of the Joint Task Force for Global Network Operations. In

these positions, he significantly expanded voice and data communications throughout the Department of Defense and served the President following the 9/11 attacks. Lt. General (USA ret) Pete Cuvillo last served as the U.S. Army Chief Information Officer and G6, responsible for Cyber, C4 and Information Technology (IT) leadership of the U.S. Army's 1.2 million-person organization and a \$5.9 billion annual IT budget. Among the topics — what shifts are occurring, how will the spending change, and where are the forthcoming opportunities for defense contractors in the shifting marketplace?

# A new world order

Since 2001, the discretionary portion of the federal budget has increased by \$583 billion. The U.S. defense budget, which has more than doubled since the attacks of 9/11, accounts for nearly 65% of this growth. Since taking office in 2006, Secretary of Defense Robert Gates has managed to cut some of the Pentagon's major weapons systems, but he has indicated that the defense budget must grow roughly two-to-three percent above inflation to sustain the current force structure.

However, bipartisan concerns over the growing federal deficit could have significant adverse impact on the defense budget. The (bipartisan) Sustainable Defense Task Force report — *Debt, Deficits, & Defense: A Way Forward*<sup>1</sup> — notes that meaningful deficit reduction must include all elements of the federal budget, including the defense budget, and that America's national security is predicated on the solvency of the American government and the vibrancy of the U.S. economy. The report questions the need for sustaining the current force structure and presents a series of options which, taken together, could save up to \$960 billion between 2011 and 2020. The options run the gamut from eliminating the bomber leg of the strategic triad; delaying the replacement of the KC-135 tanker; reducing the number of carrier battle groups and SSBNs; reducing forward deployed forces; reducing the end strength of both the Army and Marine Corps; cutting back the F-35 procurement or eliminating the F-35 altogether. The elections in November 2010 will send a strong message about "how much defense is enough."

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“The department has set a goal of finding more than \$100 billion in overhead savings over the next five fiscal years, starting in FY ‘12. As a matter of principle and political reality, we must do everything possible to make every taxpayer dollar count.”

**Robert Gates, Secretary of Defense, June 28, 2010**

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<sup>1</sup> 2010 Quadrennial Defense Review (February 2010)

## What will the future nature of conflict look like and what impact could that have on new military requirements and capabilities?

Since the fall of the Berlin Wall, the demise of the Soviet Union, and end to the Cold War there has been a lack of definition regarding the scope and impact of future warfare. The 2010 Quadrennial Defense Review (QDR)<sup>2</sup> began to define the future threat, prioritization of missions, and requirements for the U.S. Military. Several themes and conclusions emerged, among them that the United States (U.S.) is, and will continue to be, a nation at war; that to maintain our global leadership role, the U.S. will seek out partners, and will prefer to fight in coalitions. The QDR also stated that the U.S. military will continue to modernize with affordable and relevant weapons to meet the demands of a complex and uncertain security landscape. Further proclaiming, the U.S. must plan and be prepared to prevail in a broad range of operations that may occur in multiple theaters in overlapping time frames.

Many of the dynamics of this complex strategic environment are emerging, as is the demand for new and improved capabilities. Globalization and interdependent economies, the emergence of new and shifting spheres of influence, the spread of technology, and the advancement of communications capabilities make military requirements and modernization decisions extremely challenging. Adding to the complexity of the situation, we live in a world with accelerating population growth, shifting demographics, and evermore competition for scarce natural resources. The challenges are enormous. Lastly, a rapidly growing U.S. budget deficit will limit the growth and expansion of the U.S. military, forcing military planners and decision makers to select capabilities that not only respond to our most challenging threats, but to also continue providing

asymmetric advantages over potential adversaries. Future warfare will most likely be in the form of small, complex, and many times urban conflicts, which will often be precipitated by resource competition. In response to new 21st Century threats, conflicts will also likely be waged in the new mediums of Cyber and Space requiring innovative technologies and deterrence methods.

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“I would say to anyone who’s hesitant about embarking on this path that they need to consider the alternative. And the alternative is broken programs, turbulence of canceled programs, unpredictability and uncertainty for industry, erosion of the taxpayers’ confidence that they are getting value for their money, and, above all, lost capability for the war fighter that we can get if we’re successful in inducing productivity growth, leanness, and restoring affordability in Defense.”

Ashton Carter, AT&T Under Secretary of Defense, June 28, 2010

<sup>2</sup> The Sustainable Defense Task Force report “Debt, Deficits, & Defense: A Way Forward, the report of the Sustainable Defense Task Force” (June 11 2010)

## How will equipment capabilities and requirements change to meet the battles of the future?

### A. Intelligence, Surveillance and Reconnaissance

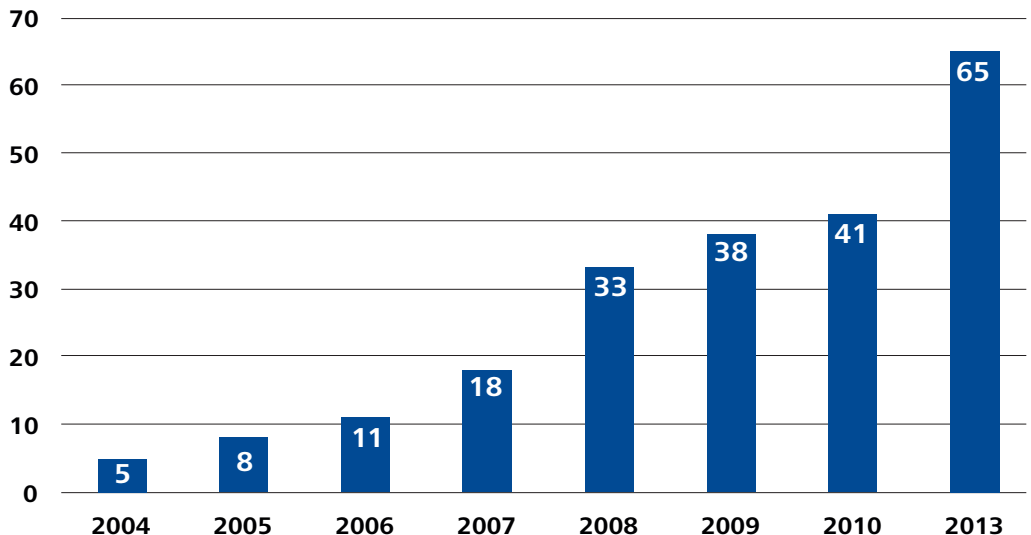
New global defense and security realities warrant the development and deployment of capabilities to defend against new threats. With a flat and declining budget scenario, it will be necessary to eliminate programs and capabilities that are not “core” and defense contractors will need to think ahead to what the customer will need both now and in the future. The primary market opportunity is in next generation Intelligence, Surveillance and Reconnaissance (ISR).

ISR, which includes traditional and remotely controlled ground, air and space capabilities and the collection, analysis and dissemination of data to the warfighter, will continue to be the key to future combat operational success. ISR was once thought of as *the great combat enabler*; however, it has become a primary mission in the Afghanistan conflict as well as the global fight against extremists and terrorists. As the saying now goes, “if you can find them, you can neutralize them”. Demand to manage the collected

ISR information through automated data fusion, information archiving, cataloguing and dissemination will continue to grow exponentially. Employment of remotely controlled systems, used in air, land and sea applications, will expand as commanders’ increase their demand for persistent surveillance and the need for monitoring adversaries, through all weather conditions, without interruption. As the persistence requirement continues to expand more into Space, that medium will become even more contested.

The U.S. Air Force is dramatically expanding the available number of 24/7 surveillance and reconnaissance orbits and is planning to field 65 UAV operational combat patrols by 2013. Taking into account training, maintenance and combat replacement aircraft, each orbit will require an estimated ten systems and associated personnel. Add to that the “Gorgon Stare” Wide Area Airborne Surveillance (WAAS), a newly developed imaging system which will multiply by tens the number of targets monitored

Chart 1. Growth in Air Force medium-altitude MQ-1 Predator and MQ-9 Reaper Combat Air Patrols



by each UAV targeting system and the potential amount of data collected on a daily basis becomes daunting. Additional increases in detection capacity are planned, and research and development continues on the Autonomous Real-time Ground Ubiquitous Surveillance Infrared (ARGUS-IR), an IR sensor that will provide up to 65 predator quality streams of full motion video. When one considers the 65 future planned UAV orbits with 65 streams of video from each orbit/sensor, the 4000+ real time sources of video will demand huge capacity for collection, dissemination, analysis and archival of information.

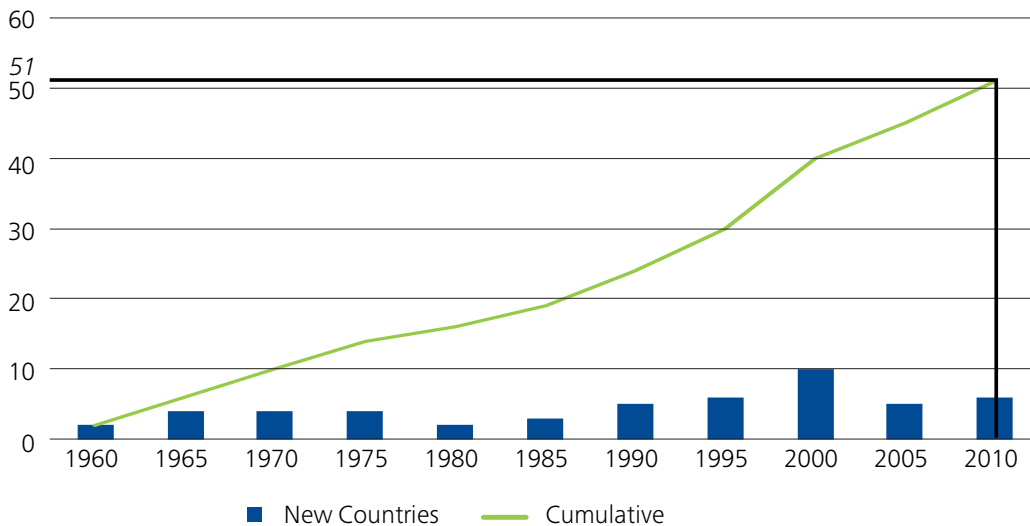
Innovative new platforms are being developed. Long endurance (weeks) Aerostats and even longer endurance exotic high altitude UAVs that could provide even greater persistence and massive amounts of information are close to being operational. Data without analysis and dissemination is useless. Onboard pre-processing, and bandwidth conservation, will be necessary for increasingly larger packets of information to be downloaded over

satellite links to data fusion applications, mission operations and intelligence analysts for interpretation. The U.S. armed forces are significantly increasing the number of analysts (by more than 2,000 in 2010), but improvements in automated fusion, dissemination and archiving will continue to be in high demand.

**B. Space: A demand for affordable alternatives**

Since the early 1960's when the Apollo program was launched, the U.S. has enjoyed an asymmetric advantage in Space. Until recently, America dominated the highest of high grounds with the most capable, and sometimes only, electro-optical (EO); Infrared (IR); positioning, navigation, and timing (PNT); meteorological; and signal intelligence satellites that provided military commanders with a considerable advantage over any adversary. That is changing rapidly. Friends and adversaries alike recognize the importance and advantage that space-based assets provide and are in the process of developing and launching, their own Space programs.

Chart 2. More Countries Owning/Operating Satellites



Space no longer belongs to the U.S. and the former Soviet Union. Since the inception of the space age in 1957, the number of countries owning/operating space systems has grown to 51, and the number of countries with indigenous launch capability now stands at 11, with numerous other countries waiting in the wings. Indeed, the development of a space capability is an accelerant to economic growth. Brazil, India, Israel and the United Arab Emirates (UAE) are developing robust, diverse, organic Space programs. The European Union (EU) Space Agency will soon be fielding Galileo, their version of the U.S. GPS system. Russia is reconstituting GLONASS, its navigation system, and China, a partner with the EU on Galileo, has also fielded their own version of GPS that is operational for China on a regional basis. Additionally, as a demonstration of their growing anti-access capability, China fired on, and successfully destroyed, one of their satellites. This simultaneously demonstrated the vulnerability of space platforms from ground intercept as well as highlighted the fragility of space based assets. The growing cost and vulnerability of space assets is forcing a new look at how those requirements are met.

Further, the concept of Operationally Ready Space (ORS) is gaining acceptance. ORS was established to develop, acquire, field and employ space capabilities for improved responsiveness, shortened timeframes, and to ensure more affordable ways to *support military users, military operations* and meet national security requirements. New approaches are necessary for the ORS initiative to create opportunities for integration as well as for the broader space operations efficiencies to ensure affordable access to the space-based capabilities where reliable, on-demand replacement vehicles could be launched, effectively filling the void caused by failed or "attacked" space assets. Additionally, hypersonic, through space, reusable air vehicles providing broad area, high altitude, persistent surveillance are being discussed as an affordable means of augmenting today's expensive satellite constellation. The U.S. Air Force recently launched a

prototype vehicle, the XB-37, which addresses that growing operational requirement. As we have recently witnessed with the successful launch of the SPACEX Falcon 9 spacecraft, the paradigm of space launch and private competition is bringing new business case opportunities to the space industry. International opportunities in the Space arena will continue to grow rapidly as nations strive for parity in the ISR arena.

### **C. Requirements for a broad mix of military capability remain**

Conventional military capabilities will remain a necessity; however the likelihood of near- to mid-term large force-on-force conflicts seems less probable. The U.S. will continue to have a requirement to maintain a robust mobility capability in order to retain the ability to respond rapidly to global threats, crisis and disasters. Therefore, some upgrades to the U.S. military conventional force will be needed. The acquisition of an Air Refueling Tanker replacement aircraft along with the existing strategic air and sea lift capability will fill that need for decades to come. The F-35 Joint Strike Fighter (JSF) will fulfill the need to modernize three military Service's Airborne Defense and Air Superiority fleets for decades into the future. The efficiencies gained through a more common logistics supply chain for the JSF could reap large benefits for the DoD. Interoperability with at least seven JSF export nations will also be enjoyed, while fulfilling a part of the QDR vision to build partnership capacity. The U.S. Navy will continue to modernize its littoral, blue-water and subsurface fleets and the National Missile Defense capability will continue to be upgraded and improved. Beyond those requirements, large platform requirements and acquisitions seem unlikely. More likely, there will be product upgrades to existing platforms, much like we have seen in Afghanistan where 50 year old B-52 bombers received upgraded avionics and new weapons (GPS guided bombs) and sensors (Litening Infra-red sensor pods for laser guided bombs) thus enabling them to become Close Air Support (CAS) weapons systems operating from 30,000 feet above

enemy fire in close coordination with an Army ground battle controller. Never envisioned by military planners or authors of doctrine, but created out of the necessity of the moment, it is a testament to the requirement for flexible, adaptable systems. In an era of unpredictability and demand for affordability, products that force-multiply and create relevance will be in high demand.

#### **D. Precision strike: the ability to eliminate the threat with high confidence**

The capability to eliminate threats while reducing preventable casualties and collateral damage has significantly improved over the last 20 years with the advent of laser- and GPS-guided “smart” bombs. However, with the glare of 24/7 real time news

reporting every friendly fire casualty and incident of collateral damage (i.e., killing or wounding innocent bystanders), commanders in the field are reticent. Laser targeting and “designer bombs” that can adjust damage capability on the fly, depending on the needs at the time of use, would be a welcomed addition to the arsenal. Also welcomed will be bomb casings made out of composite materials to help eliminate fragmentation damage, further reducing collateral damage. In the midterm, bombs and bullets will be superseded with directed energy weapons, which will eliminate the need for kinetic weapons due to its precision targeting and lethality. In essence, technology innovations that can isolate and disable our adversaries without causing harm to innocent people and unnecessarily damaging property will be welcomed.

#### **Along with the expansion of information technology, the medium of Cybersecurity has rapidly evolved. How should defense Contractors approach the Cybersecurity market?**

Cybersecurity is vital to our national interests and wellbeing in areas of national security, financial stability, economic growth, continuity of business operations, and personal safety, comfort, and convenience. Cybersecurity is trendy now, but the serious business of deterrence, detection and protection against malware, spyware, electronic viruses, Trojan horses and insidious infections of our electronic assets is of paramount importance. Defense contractors must understand the significant soft power benefits that can be derived from daily operations in cyberspace and, correspondingly, the vulnerabilities presented without the safeguards of proper cybersecurity. These realities must be addressed for both internal business operations and for products and services sold to customers. Today, cyber intruders are exploiting others through data manipulation and theft, fraud, crime, espionage, and attacks through the relative sanctuary of cyberspace. With today’s increasing demands for more open communications and the growing sophistication of malevolence in the Internet, cybersecurity also has grown to a top

defense priority in all markets ranging from aerospace and defense, command control, ISR, energy, health-care, transportation, supply chain logistics, and human capital. Today, cyberspace threats are coming from all directions — both external and internal — and from syndicated activity throughout the international community. Attacks come without warning at the speed-of-light and, today, intruders would prefer to exploit our systems quietly or lay dormant within until they decide to launch their malicious action against the unaware and their enterprise.

Firewall software, threat identification, sophisticated authentication routines, communications and software redundancy, and next-generation cybersecurity applications need to be developed and deployed to protect the internet, company intranets, the electronic command and control networks that manage power generation and distribution, infrastructure (water, sewer, gas, bridges, highways, trains, air traffic management, etc.), and the shared government and educational networks.

While we operate daily in cyberspace, we are confronted with two opposing dynamics. On one hand, we are encouraged to collaborate and share information more freely, gaining the benefits of cloud computing and Web 2.0 applications and tools. On the other hand, this state of openness is presenting a new set of targets for cyber intruders, pests, warriors, criminals, spies, and terrorists. Only by creating a new *cyber mindset* will we be able to counter the significant losses being incurred daily.

Cybersecurity has become a new prerogative for successful business operations — no matter what your organization does. Defense contractors must

realize that intruders are sophisticated enough today to gain access to almost every information network and database. Through proper risk management and increased government and industry collaboration, we will be able to manage the associated risk and secure a future in cyberspace. Cyber operations are, and will continue to grow as a part of the battle space. Growing dimensions of today's battlefield include electronic attack and defense to ensure friendly (but to disrupt adversary) data management and dissemination as well as to defend friendly weapons systems, and attack enemy weapons systems. Cybersecurity risk management must become a top priority today.

### **Budget pressures will require business process improvement. Are there opportunities for Defense Contractors in the Government IT and Systems integration markets?**

**Cloud Computing:** Government CIOs, in particular, are being asked to maintain a delicate balancing act. For example, how do you balance the government's demand for fast, transparent access to information versus the need for robust security and privacy? The need to streamline internal agency operations versus the mandate to collaborate and share data across multiple agencies? The drive to provide new services versus the need to reduce IT spending?

The next chapter has yet to be written; there is a unique opportunity to work collaboratively across the public and private sectors to write that next chapter as one of technology leadership and global advancement. When considering both the promise and the inherent challenges in government IT, there's no question that cloud computing has a central role to play going forward. Cloud computing is a nascent market at present and there is much work to do as an industry to address key barriers to broad adoption of cloud within government agencies. But before we get to that, why cloud?

In its simplest form, cloud computing is when IT resources and services are abstracted from the

underlying infrastructure and provided on demand and at scale in a multi-tenant environment. Cloud computing is the most network-centric computing architecture ever, in that it relies on the network to deliver IT value and functionality. In ongoing discussions with government CIOs, flexibility is the biggest advantage cited in moving to the cloud model. Cloud computing promises to enable a new level of elasticity in IT via on-demand resource allocation and dynamic provisioning — not to mention faster application deployment. Cost is the other big advantage, with cloud computing, especially in the areas of investment reduction and capital management, since cloud computing is essentially outsourcing IT hardware to the cloud. Significant performance and financial opportunities are growing along with the cloud.

The new reality will require not only innovations in products and services, but in the business model used to develop, produce and deploy these technical innovations. Expensive, long lead time, complex and bureaucratic acquisition processes leading to cost overruns and schedule performance delays, will no longer be tolerated. A recent Deloitte study found that the DoD is 26% over budget, in aggregate, on its

major development programs. Furthermore, without significant changes, the DoD is expected to be 46% over budget on these programs in 10 years. This legacy business model is inadequate and incapable of responding to the needs of the new reality.

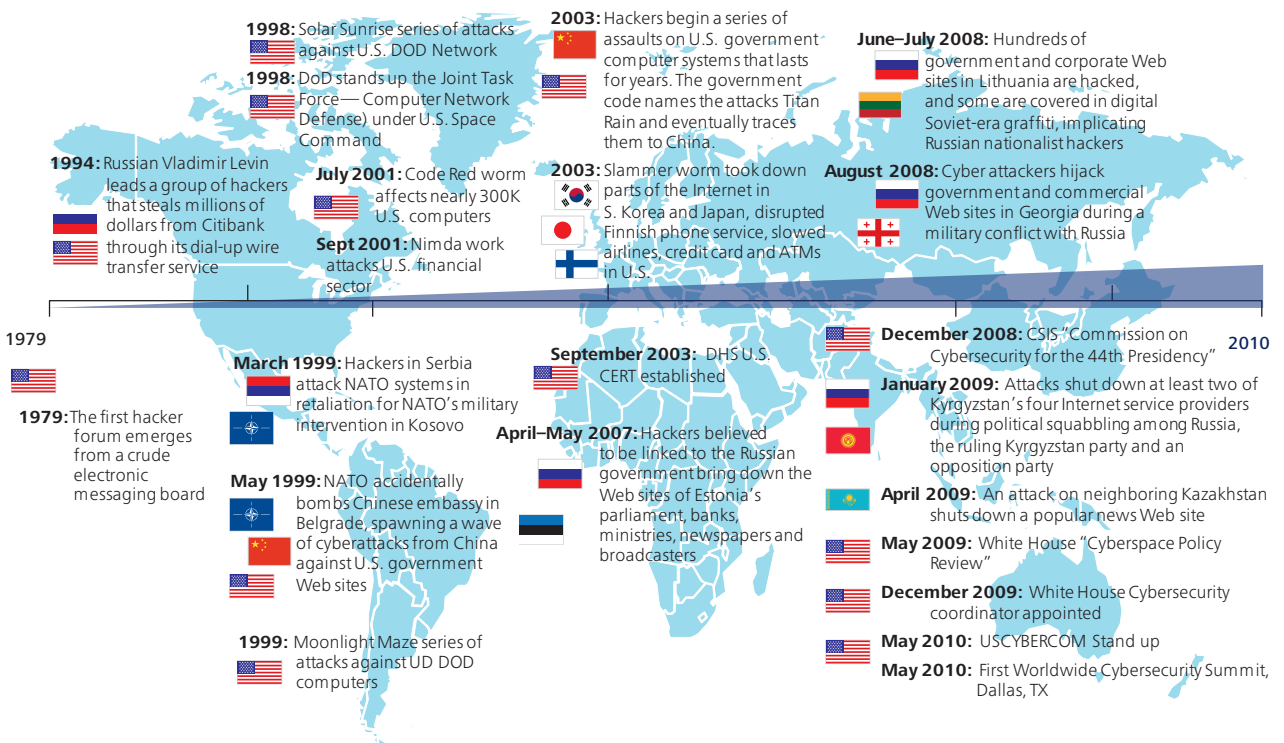
Nothing short of a complete transformation in the requirement specification, bidding/estimating, acquisition/selection, product development/design, manufacturing, supply chain, and aftermarket support processes is essential. The new response needs to contemplate global commerce, including the need to sell, produce and service internationally. Additionally, different financial arrangements will be required — such as Public Private Partnerships (PPP), next-generation offset arrangements and possibly even bartering. Programs will need to be planned with adequate reserves, taking into consideration the technical, complexity and the unknown problems most programs eventually encounter.

Additionally, the deciding criteria for acquisition decisions should not be based on the low bid, the incentive for contractors to bid low and win at all costs is too great — often times resulting in the problems cited above. Companies need to create a more responsive business model that incentivizes honest development costs to be estimated and bid, realistic program schedules to be developed, and nurtures a conducive environment for creative, problem solving and technical innovation development. Additionally, they need a business model that can respond quickly to the dynamic, vigorous requirements to address and defeat our adversaries.

**Cyber Risk Management:** Every business, regardless of maturity or industry, faces a wide variety of risks. These risks come in many forms, including market risks, financial risks, legal risks, and more. One of the most challenging areas is the risk associated with information and information systems — cyber risk. Virtually every business today is facing cyber risks, ranging from the loss of information on a single laptop to total business disruption due to a data center outage; and cyber risks are constantly changing.

A risk-based approach can start with the assumption that an unauthorized user can gain access into the system, then design responses based on the value of the potentially compromised data. This approach calls for risk ranking; i.e. prioritizing data and information based on the type, value and impact if the data were to be compromised. The organization can then decide on which data to focus resources, how much to spend, and which tools to employ to protect data. This approach can help the enterprise shift away from building a “great wall” against all threats to moving towards identifying and addressing the most significant threats. This entails prioritizing risks on the basis of their likelihood, impact and potential interactions with other risks, then allocating resources accordingly. It is an investment that takes effort, expense, training, and resources to develop a system of categorization by value and then to track data after it leaves the organization, but it pays off in efficiency, effectiveness, and an emerging set of expanding business opportunities.

Chart 3. The evolving U.S. response to borderless cyber threats



**How real is the opportunity for defense contractors to enter the alternative energy market given their lack of history in that sector?**

There is unquestionable opportunity for defense contractors to enter the alternative energy market. Energy assurance and cost have rapidly become a focus area for the U.S. military. Fuel use is a large component of that focus given that combat fossil fuel burn-rate has risen 175% since the Vietnam war to 22 gallons per soldier used per day. The U.S. military spends \$1 Billion/year for every \$10 dollar increase in a barrel of oil. In 2008 alone, that was an increase of over \$10 Billion in direct fuel costs. Due to the growing need for fuel in Iraq and Afghanistan, convoy attacks are one of the highest causes of casualties, with upwards of 80% resulting from attacks on convoys since many of those supply vehicles are carrying fuel and water. The cost in life and currency

to the U.S. military and coalition partners is massive and the imperative to develop and produce affordable, reliable alternatives for petroleum based fuels has never been greater.

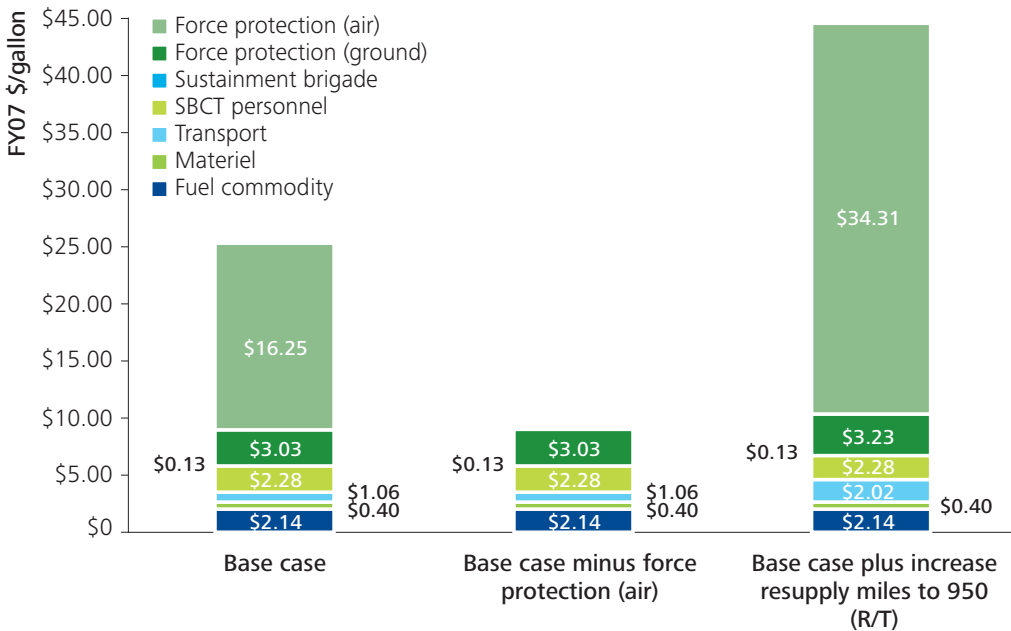
An opportunity exists with a viable, alternative energy technology that is available today and that has the exact characteristics of the current military combat fuel. This drop-in replacement fuel for the current petroleum based diesel fuel would effectively eliminate the need for new equipment and new supply processes. Affordability through scalability seems to be the major hurdle to overcome regarding successfully developing and fielding alternative fuel. Private heavy industry and airlines use the same fuel

and have the same monetary fuel cost challenges as the U.S. military. There are opportunities for Private Public Partnerships to address what has become a national security and economic security challenge by developing an affordable, reliable, transportable and scalable alternative fuel for military tactical and heavy industry vehicles, ships and aircraft.

There is also the need for technological innovations that can reduce lifecycle operating costs of military, defense and security hardware, and in particular, their fuel use. First and foremost is the need to transition fossil fuel based Mine Resistant Ambush Protected (MRAP) vehicles, trucks, tanks, aircraft, ships and generators to readily available and cheaper fuel

such as nuclear, solar, wind or other alternative fuel sources (i.e. algae, biomass, fusion, fuel cells, etc.). The Department of Defense (DoD) has recognized the need to create savings through energy efficiencies, smart grid technology and conservation on their military installations. Sustainable, renewable energy will be a major part of that push to create more affordable installations. Smart energy management tools, hybrid and electric non-tactical vehicles, energy efficient buildings and materials as well as conservation techniques and processes will all be incorporated as part of the DoD's overall energy program. Technology, process and management opportunities exist for private industry in this area.

**Chart 4. The fully burdened cost of fuel is enormous**



Deloitte conducted a study of energy use in wartime from World War II (WW II) through the current Middle East wars, and found that in today's conflicts, fuel consumption is 22 gallons used, per soldier, per day, for an average annual increase of 2.6% in the last 40 years, and an expected 1.5% annual growth rate through 2017.

Source: "Sustain the Mission Project Energy Costing Methodology," Steve Siegel, Energy and Security Group, DoD; May 23, 2007.

**GLOBAL MARKETS WILL GROW IN IMPORTANCE. Are there specific regions of the world and countries where U.S. defense Contractors should focus their activity?**

Emerging countries are adding to and improving their national security capabilities in the area of homeland security initiatives to protect borders, coast lines, and airspace; and critical infrastructure. Countries in the Middle East and Asia are particularly active along with some South American nations. In the Middle East, specifically in the Gulf Cooperation Council (GCC) states such as the United Arab Emirates (UAE), Bahrain, Saudi Arabia and Qatar, the global demand for Missile Defense technology and training for deployment will rapidly expand due to the increasing threat from ballistic missiles.

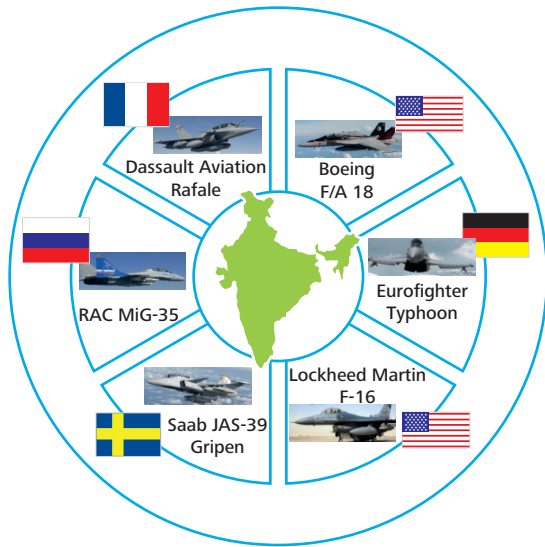
Saudi Arabia and the UAE are scheduled to purchase a combined \$100 billion in defense equipment over the next 3–4 years. India is poised to become one of the largest importers of military equipment in the world over the next few years and is planning to purchase approximately \$30-\$40 billion worth of new equipment in the next decade. India will dramatically expand its Air and Air Defense capacity and capability by acquiring 126 multi-role combat aircraft, an upgraded strategic and tactical airlift capability, an improved maritime airborne surveillance capability, a new fleet of military helicopters and much more. Also, as mentioned earlier, India is in the nascent stages of a modern space program.

In South America, Brazil is nearing a multi-billion dollar decision on their new multi-role combat aircraft. And globally, the Civil Aviation community is preparing to field a new \$40 billion space based

navigation system called NextGen (Next Generation) and SESAR (the Single European Sky ATM Research Programme) that will revolutionize the commercial Aviation travel and logistics world. Although challenges to operating in the global business environment do exist, such as ITAR (International Traffic in Arms Regulations) restrictions and FCPA (The Foreign Corrupt Practices Act of 1977) guidelines and concerns, the opportunities are enormous.

Recently, in a speech before the newly formed Senate Aerospace Caucus, President Obama's National Security Advisor, General Jim Jones, (USMC, Ret.) announced a plan to reform the U.S. export control process. If implemented, the reform would address technology control lists, licensing and enforcement by creating an Export Enforcement Fusion Center, all designed to make the U.S. aerospace and defense industry more competitive in the global market. Expertise on unique regulatory, policy and societal rules and regulations as well as patience and the need to develop personal relationships through routine presence will all continue to be important for individual companies to succeed in international defense markets. A thorough understanding of, and compliance with, individual country "offset" requirements is also a must. Savvy offset management can actually be an income generator under the right circumstances; transfer of ITAR compliant high tech for example can often result in an offset multiple that can be sold or "banked" for later use.

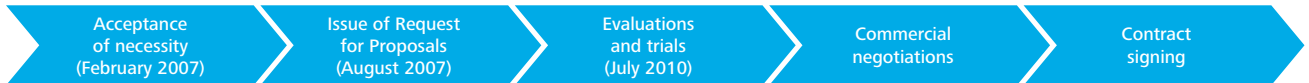
Chart 5. India's \$10 billion Medium-Range Multi-Role Combat Aircraft (MMRCA) deal



**Details of the 126 MMRCA deal**











- Deal size: ~\$10 billion
- Deal status: Field Trials being conducted
- RFP type: Buy and make (Global)
- Offset requirement: 50% (Higher than the official requirement of 30%)
- Bidders: Lockheed Martin, Boeing, Dassault Aviation, RAC MiG, Eurofighter, and Saab
- While Dassault and MiG have earlier supplied aircraft to India; Lockheed Martin, Boeing, Eurofighter, and Saab are the first-time contenders for an Indian defense deal.

**Timeline for the deal**



Source: Indian Defense Procurement Manual 2008; Photographs sourced from the websites of U.S. Air Force, Dassault Aviation, MIG, EADS, and SAAB.

Chart 6. Offset policies of select nation buyers of U.S. arms exports.

Nations	Offset sector	Minimum value (\$ million)	Minimum offset %	Direct vs. indirect	Offset activities focus areas
 Saudi Arabia	Civilian and military	Not explicitly stated	35%	Both	Economic diversification, manpower development, strategic self-sufficiency, and technology transfer
 India	Military	\$65 million	30%	Direct	Purchases, invest in Indians firms and JVs, technology transfer
 Korea	Military	\$10 million, but possibly lower when offset is needed	More than 30%–50%	Both	Acquiring high technology, manufacturing and exporting parts and components
 Brazil	Military	\$5 million	100%	Mix	Technology transfer
 Canada	Civilian and military	\$100 million, but possibly lower based on type	100%	Both	Technology transfer
 Australia	Civilian and military	\$9 million (Civilian) \$4 million (Military)	“Maximized local content where cost effective”	Both	Local production, R&D, technology transfer, export sales, infrastructure, JVs
 Turkey	Civilian and military	\$10 million	50%	Both	Export, technology transfer, R&D, training
 Israel	Civilian and military	\$5 million	35%	No distinction	Subcontracts, R&D, technology transfer, market access/exposure
 UAE	Military	\$10 million	60%	Indirect	Add economic value to UAE’s economy
 Kuwait	Civilian and military	\$34 million (Civilian) \$10 million (Military)	35%	Mix	Technology transfer, technology partnerships

Various sources — Government reports, Deloitte analysis

Countries are ranked in order of latest Military Expenditures based on data taken from SIPRI, except UAE which is based on Deloitte analysis.

Conversion rates applied are:

1 Australian Dollar = \$0.87; 1 Kuwaiti Dinar = \$3.40; 1 Indian Rupee = \$0.02; 1 Saudi Riyal = \$0.27

# Summary

The security threats the world faces today are more complex and diverse than ever before. There is a shift underway in how the U.S. military plans, organizes and equips for battle. Single use, inflexible, non-modifiable systems will be difficult to justify and unlikely to compete for the DoD or international dollar. The expectation is to balance the DoD portfolio across the spectrum of warfare, in an affordable, flexible, interoperable manner. Efficiencies through process or technology improvements will be of high value.

International markets will often mirror U.S. DoD acquisition strategies, especially where nations are philosophically and doctrinally aligned with America. The U.S. will encourage like minded nations to acquire U.S. produced equipment and technology as part of the U.S. Strategy to build partner capacity and to fight "in coalitions". An increasing percentage of the opportunity for the U.S. Aerospace and Defense industry will be in the International Aerospace and Defense arena.

## Deloitte sees five areas for significant growth in the aerospace and defense sector.

- 1). Intelligence, Surveillance and Reconnaissance (ISR):** platforms, systems, sensors and data management capability. Sensor fusion and dissemination as well as analysis will be at a premium. Pressure to develop affordable, survivable, robust **Space capabilities** will be in high demand. New and creative ways to fulfill the requirements now gained only from Space will be of extremely high value.
- 2). All things Cyber:** Cyber has become a new domain along with Land, Sea, Air and Space. As the Cyber realm becomes better defined, requirements in technology, systems and systems engineering, training, products and program management will be and are rapidly growing. For example, an entire new business sector will be created by the need to define critical cyber infrastructure and the actions required to protect those assets.
- 3). Government Services and IT:** Massive deficits will put downward pressure on the defense budget forcing **DoD business reform** and demanding changes to business practices and organizations. Technology will play a significant role in the DoD reform and create opportunities for efficiencies. Secretary of Defense Gates announced his intention to cut \$100 Billion in the next five years from the defense budget through more efficient management processes. **IT** will also continue to play a considerable role in upgrading and multiplying combat capability and capacity. Lastly, IT will be employed to resolve interoperability challenges between services and allies.
- 4). Business Process Improvement:** Opportunities to create efficiency and add effectiveness exists through employing smart business practices and processes. Lean Six Sigma, change management, human engineering, Performance Based Logistics (PBL) and processes, Public Private Partnerships (PPP) along with the previously mentioned IT applications all offer significant opportunity for increased productivity and war fighting capacity. The management of the Global JSF fleet is a great example where PBL and advanced supply chain management practices could both increase combat capacity and reap huge financial dividends.
- 5). Globalization and International Markets:** The Global economy and international travel has created a more interdependent world. New partnerships and alliances, both formal (the G-20) and informal (the growing U.S./India strategic relationship), are emerging and many nations see benefit in cooperation, commonality and interoperability with the U.S. The U.S. defense budget will likely contract and the international demand for U.S. technology will expand. Knowledge and expertise in ITAR, FCPA, offset regimes and protocols, partnership building and joint venture rules and norms, competitive pricing, local "knowledge" and understanding of cultures and informal leadership structures as well as personal/corporate relationships will all be important when competing in the international defense market. "Sell with" opportunities with other U.S. firms will become even more common and desirable.

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**Sources:**

Except where otherwise noted, the data contained within is based on the experience and perceptions of the authors, three retired General Officers from across Deloitte LLP, having a combined background of 105 years serving in the U.S. Air Force and U.S. Army.

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