

# ARCHIVED REPORT

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## Analysis 1 The Market for Electronic Warfare Systems 2012-2021

### Table of Contents

<b>Executive Summary</b> .....	2
<b>Introduction</b> .....	3
<b>Trends</b> .....	5
<b>Competitive Environment</b> .....	9
<b>Market Statistics</b> .....	10
Table 1 - The Market for Electronic Warfare Systems Unit Production by Headquarters/Company/Program 2012 - 2021 .....	16
Table 2 - The Market for Electronic Warfare Systems Value Statistics by Headquarters/Company/Program 2012 - 2021 .....	26
Figure 1 - The Market for Electronic Warfare Systems Unit Production 2012 - 2021 (Bar Graph) .....	38
Figure 2 - The Market for Electronic Warfare Systems Value Statistics 2012 - 2021 (Bar Graph) .....	38
Table 3 - The Market for Electronic Warfare Systems Unit Production % Market Share by Headquarters/Company 2012 - 2021 .....	39
Table 4 - The Market for Electronic Warfare Systems Value Statistics % Market Share by Headquarters/Company 2012 - 2021 .....	42
Figure 3 - The Market for Electronic Warfare Systems Unit Production % Market Share 2012 - 2021 (Pie Chart) .....	45
Figure 4 - The Market for Electronic Warfare Systems Value Statistics % Market Share 2012 - 2021 (Pie Chart) .....	45
<b>Conclusion</b> .....	46

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## Analysis 1

# The Market for Electronic Warfare Systems

## Executive Summary

Over the next 10 years, an estimated \$29.4 billion will be spent on the development and production of the major EW programs covered in this analysis. Some 64,473 units of leading electronic countermeasures (ECM), radar warning receivers (RWRs), electronic support measures (ESM), and other EW systems that make up this analysis will be produced.

The top-ranked EW producers as projected in this analysis are Northrop Grumman, BAE Systems, ITT Corp, Raytheon, and the SELEX Galileo division of Finmeccanica.

SELEX Galileo is the prime contractor of a consortium responsible for one of the most important international EW systems, the EuroDASS Praetorian. The system provides ESM and ECM, missile warning, and towed decoy for the Eurofighter Typhoon fighter aircraft. Praetorian is standard equipment on the Typhoon for all member nations participating in the program. As of early 2012, these nations include the U.K., Germany, Italy, Austria, Spain, and Saudi Arabia.

The most recent contract for the system was awarded in September 2010. Worth \$613.2 million, the order calls for system production for all of the 112 Tranche 3A Eurofighter Typhoon combat aircraft on order for the air forces of the U.K., Germany, Italy, and Spain. First deliveries are scheduled for mid-2012.

The next 10 years should see production of 429 EuroDASS Praetorian systems for applications to newly built Typhoon aircraft. The estimated 10-year value of this work is \$858 million.

Early 2011 saw the successful combat use of a new, key EW platform, and one that points the way for steady production of important technology. From its work during the early days of the uprising in Libya and the subsequent military operation Odyssey Dawn, the EA-18G Growler electronic attack aircraft was given partial credit for the fact that there was no loss of NATO coalition aircraft during the action.

Use of the Growler marks an important phase in the development of electronic jamming systems like ALQ-99 and the ALQ-218.

While development and production of technology for airborne electronic attack will make up a big part of the EW market in the years ahead, the demand for systems to defeat improvised explosive devices (IEDs) will continue to be a dominant force.

Within the U.S. FY12 defense budget, \$771 million is included in procurement funding for Joint Counter Radio-Controlled Improvised Explosive Device (RCIED) Electronic Warfare (JCREW) jammers through 2016. Production of the systems in several variants is well under way. Sierra Nevada Corp in May 2011 was awarded a \$38.5 million firm-fixed-price modification to a previously awarded contract for 360 dismounted-CREW systems.

Protection of aircraft from missile attack will drive worldwide demand for a wide variety of radar warning systems and missile-countermeasures systems. The next several years should see steady production of Italy's ELT/572 counter, man-portable, air-defense systems (MANPADS) directed infrared countermeasures (DIRCM) system for multiple Italian Air Force platforms.

The system is being installed on Italian Air Force C-27J Spartan and C-130J Super Hercules aircraft as well as AW101 combat search-and-rescue (CSAR) helicopters. The projected 10-year production value of this work is estimated at close to \$100 million. Although, with the system's strong association with the Israeli Air Force and its likely use on VIP aircraft, this value is probably an underestimate.

**Note:** *As this analysis is a sampling of the Electronic Warfare Systems market and its various subsegments (i.e., jammers, radar warning receivers, and missile and laser warning systems), it is not inclusive of every surface or airborne EW system, product, or technology. A number of lead products and systems in each arena are surveyed to ascertain market patterns. Statistics and monetary amounts only represent systems that are currently in production, indicating where these systems are heading. From these indications and trends, an overall picture of the market has been formulated.*



EA-18G Carrying ECM Pods

Source: U.S. DoD

## Introduction

There is a steady need among the world's military organizations for proven EW systems to perform platform self-protection, surveillance, and communications, and data jamming for very active military forces. Hundreds of millions of dollars in contracts have been awarded in the past year to EW makers to provide their tested systems on just about every significant military platform coming off the assembly lines.

Much of this has to do with public and private conceptions of the function of EW systems. Just about anybody can understand and appreciate the need to protect aircraft from enemy-fired missiles. Thus, at least for the military, procurement and research and development into next-generation missile countermeasures technology is strongly supported.

Perhaps harder to grasp are the "unseen" results that come from the use of sophisticated jamming and electronic attack systems. Merely shutting down and disabling radar and communications centers doesn't seem to have quite the same import as averting

incoming missiles. Perhaps for this reason, some important programs are either in limbo or moving at such a slow pace as to potentially jeopardize future battle effectiveness.

The need to fill these gaps in funding for technology development and distribution has led not only to continued calls from EW proponents for more funding, but also for more education of military forces in the uses of EW technology.

As threats such as missile attacks have grown more sophisticated, there's been a growing need for the development of EW systems for land and sea-based platforms and missions. Almost every leading defense company in the world has, over time, staked some new claim in the development and production of EW technology.

Drawn from the roughly 80+ major program reports in the *Electronic Warfare Forecast*, this analysis covers some of the key programs in the various major market subsegments. Many of the systems covered in this

## Analysis 1

report, such as the various jammers, radar warning receivers (RWRs), and electronic support measures (ESM) systems, have been in production for a number of years, and their successful use in military operations has only confirmed their necessity. Other systems and technologies, such as the infrared (IR) and electro-optic (EO) missile countermeasure systems, which exploit the latest in directed-energy technology, are in advanced development. For many of these programs, long-term production courses are far from certain.

Despite the emphasis on countering new threats, the demand for basic EW technology and its importance on the battlefield are fairly unchanged. Radar is still the primary means of long-range target detection, acquisition, and fire control. Weapon guidance, however, now spans all sensor technologies. Therefore, terminal defenses have had to include not only anti-radar, but also anti-infrared and anti-laser capabilities.

Key EW systems in this analysis represent both technology that has been in use for decades, and the new and developing technology that will equip a whole new breed of tactical and large transport aircraft as well as naval platforms. It is a constantly fluid mix of old and new.

Passive ESM systems have become a full and equal contributor to the situational awareness of military units. Tracked and wheeled armored vehicles represent an increasingly lethal and expensive weapons inventory around the world. Today, the vast number of ground vehicles deployed by modern, highly mechanized

armies makes protecting those assets not only a necessity but a major market opportunity.

The cycle of research, development, production, and deployment will remain a constant factor of the EW market well into the next decade. This analysis explores the current state of many of the more important EW programs, with an eye on the direction of the market for future applications. Some systems, already proven in combat, can't be produced fast enough to fill military needs. Other systems, still in the early stages of development, may never see the light of day. Money will be spent in both of these instances, but how much and who will get the lion's share are some of the issues that frame this discussion.

**Note on Methodology.** This 10-year analysis and projection of the EW segment of the defense electronics market is based on a sampling of key EW systems and manufacturers. It includes evaluations of airborne jammers, RWRs, ESM systems, countermeasures dispensers, infrared IR/EO countermeasures, laser warning receivers, and submarine acoustic warfare development, along with emerging technologies.

Statistical information is broken out by company, with a line item representing multiple contractors that provides additional data on a variety of consortia, joint ventures, and partnerships. This listing does not cover every EW system ever created or currently in the development pipeline. Ultimately, its function is to serve as an indication of the major market directions as derived from the reports in the *Electronic Warfare Forecast*.

\* \* \*



DIRCM System Installed on MC-130

Source: Northrop Grumman

## Trends

The major areas of EW systems covered in this section are radar warning receiver (RWR) and electronic support measures (ESM) systems, jamming systems, electronic countermeasures (ECM), and IR/EO countermeasure systems. Current developments in some of the leading systems in each of these areas should provide a strong indication of the direction that the overall EW market may take in the years ahead.

Each of these major subsegments is discussed in some detail, with information culled directly from the individual reports in the *Electronic Warfare Forecast*.

### ***Airborne Electronic Attack, Jamming, and ECM Systems***

The leading electronic attack, jamming, and ECM systems featured in this analysis include the ALQ-99, the ALQ-218, and the ALQ-211.

In April 2010, Cobham Sensor and Antenna Systems was awarded a \$46 million contract to deliver 60 ALQ-99 low-band transmitters (LBTs) under full-rate production Lot III for EA-6B and EA-18G aircraft. Work is expected to be completed in September 2012.

While the ALQ-99 will continue to be produced, the U.S. Navy is developing the Next Generation Jammer (NGJ), which will replace the ALQ-99 on EA-18Gs. Four companies – BAE Systems, ITT, Northrop Grumman, and Raytheon – are participating in a four-year, \$430 million competition.

In late 2009, competitors submitted proposals for the technology maturation phase of the U.S. Navy NGJ competition. In July 2010, BAE Systems, ITT/Boeing, Northrop Grumman, and Raytheon were each awarded contracts for technology maturation efforts to support the NGJ program. In this phase, contractors improve their system concepts and equipment.

The Navy plans to award an engineering and manufacturing development (EMD) contract to a single supplier in the fourth quarter of 2012. First production systems are expected to be delivered in 2018.

The ALQ-218 tactical jamming system receiver (TJSR) equips U.S. Navy EA-6B Prowlers and that aircraft's replacement, the EA-18G Growler. The systems for the EA-6Bs upgrade those aircraft to keep them relevant on the modern battlefield. After production for the EA-6B

## Analysis 1

ends in 2012, production of the ALQ-218 will solely be for the EA-18G.

The Prowler achieved Initial Operational Capability in September 2009. By reaching IOC, the Navy can effectively employ the EA-18G aircraft for operational missions to take full advantage of its airborne electronic attack capabilities.

A full-rate production (FRP) decision the following November gave the F/A-18 and EA-18G program office and industry counterparts authorization to produce and procure 54 EA-18G aircraft. The FRP decision gave the go-ahead to fulfill the program of record for 85 total aircraft.

Two EA-18G Growler airborne electronic attack aircraft in November 2010 began validation with the Naval Strike and Air Warfare Center's newest training department, the Airborne Electronic Attack Weapons School (AEAWS).

Production will also proceed for Australia. Twelve of the nation's 24 F/A-18 Super Hornets on order from the U.S. will be rewired to make them adaptable to advanced electronic warfare capabilities, including the ALQ-218. The modifications will allow the F/A-18F Super Hornets to be upgraded to full EA-18G Growler configuration.

In early 2011, the EA-18G Growler made its combat debut. During the early days of the uprising in Libya, and the subsequent military operation, Odyssey Dawn, the aircraft was given partial credit for the fact that no NATO coalition aircraft were downed or damaged by hostile fire.

Chief of Naval Operations Adm. Gary Roughead explained in an article in *DefenseTech.org* that the jammers were deployed from Al Asad Air Base in Iraq, where they had been temporarily assigned, to Aviano Air Base in Italy. When the need arose, Electronic Attack Squadron VAQ-132 was retasked and flying missions over Libya within 48 hours, the CNO was quoted as saying.

The ALQ-211 Suite of Integrated RF Countermeasures / Advanced Integrated Defensive EW Suite (SIRFC / AIDEWS) should see steady production through the next several years.

Prime contractor ITT is tapping into the F-16 upgrade market for its latest version, the ALQ-211(V)9. Besides being a central controller for the whole EW suite, the ALQ-211 is a main RF jammer, RWR, and countermeasures provider. There are now at least nine main variants in play, each tailored for a specific application.

FMS of SIRFC have been well under way for other close and trusted allies. The success of the AIDEWS with international customers installing it on their F-16s will likely continue to spread interest among other users of the aircraft.

In February 2009, ITT won a \$99.8 million competitive award to supply the ALQ-211 for 30 new F-16 Block 50M aircraft being procured by the Turkish Air Force under the Peace Onyx IV Foreign Military Sales (FMS) program.

The Pentagon's Defense Security Cooperation Agency (DSCA) in August 2010 notified the U.S. Congress of a possible FMS to the Royal Air Force of Oman of 18 Lockheed Martin F-16C/D Block 50/52 combat aircraft. Among many other systems the order would include 22 ALQ-211 units.

In December 2011, DSCA notified the U.S. Congress of a possible FMS to the government of Iraq for 18 F-16 aircraft and associated equipment, parts, weapons, training, and logistical support, for an estimated cost of \$2.3 billion.

### *Counter-IED*

Joint Counter Radio-Controlled Improvised Explosive Device (RCIED) Electronic Warfare (JCREW) jammers will be produced in steady numbers over the next several years. The U.S. has been in the process of developing counter-IED jammers in a spiral plan to reduce in number the types of systems on the battlefield. The plan allows the military to take advantage of the latest advancements in jammer technology. JCREW Spiral 2.1 and 3.1 jammers are the latest developments in this effort. The next big phase for JCREW will be called 3.3.

The U.S. has awarded numerous contracts for Spiral 3.1 jammers. The first of these is for JCREW Spiral 3.1 dismantled jammers. Unlike the Spiral 2.1 vehicle-mounted jammers, Spiral 3.1 jammers will be carried by dismantled soldiers.

In August 2010, ITT was awarded a \$455 million firm-fixed-price, cost-plus-fixed-fee, cost-only indefinite delivery/indefinite quantity contract for production of up to 5,000 JCREW 3.2 mounted systems. Work is expected to be completed by September 2014.

The U.S. Navy in December 2010 exercised the third option of the JCREW 3.3 contract and awarded ITT sole development of the system.

Within the FY12 defense budget, \$771 million is included in procurement funding for JCREW jammers through 2016.

## Analysis 1

Meanwhile, production of other variants is also under way. Sierra Nevada Corp in May 2011 was awarded a \$38.5 million firm-fixed-price modification to a previously awarded contract for 360 dismounted CREW systems.

### *IR/EO Missile Countermeasures*

Leading IR/EO countermeasures systems in this analysis include the ELT/572 directed infrared countermeasures (DIRCM) system, AAQ-24 DIRCM system, the Large Aircraft IR Countermeasures (LAIRCM) system, and the ALQ-212 Advanced Threat Infrared Countermeasure (ATIRCM) system and its accompanying AAR-57 Common Missile Warning System (CMWS) that make up the Suite of Integrated Infrared Countermeasures (SIIRCM).

The next several years should see steady production of the ELT/572 counter-man-portable air defense systems (MANPADS) DIRCM system for multiple Italian Air Force platforms. Work on several contracts awarded through 2011 is scheduled for completion in 2014.

The system is being installed on Italian Air Force C-27J Spartan and C-130J Super Hercules aircraft as well as AW101 combat search-and-rescue (CSAR) helicopters.

ELT/572 was co-developed by the nations of Italy and Israel to counter the growing threat of rogue, shoulder-fired missile attacks. Although there is little detailed information available on the system through open sources other than its military application, there is strong evidence to suggest the ELT/572 has and will be ordered and installed on additional platforms in the years ahead, especially for head-of-state and VIP aircraft.

In September 2010, the U.S. DSCA notified Congress of a possible FMS to Canada of eight AAQ-24 DIRCMs as well as associated equipment and services for CH-47F helicopters. Elsewhere, Germany has made a move to have the system installed on government VIP aircraft.

The system is currently installed or scheduled for installation on several hundred military aircraft, ranging from 40 large fixed-wing to small rotary platforms. Under the name Nemesis, the system is in strong demand in the United Kingdom and Australia.

The Pentagon's FY12 budget includes \$63.2 million for DIRCM purchases through 2016 for the Navy alone. Aircraft types that will receive the system include UH-1Y, MU-22, CH-35, MH-60R/S, and AH-1Z platforms.

The AAQ-24 can be adapted to various-size aircraft and mission profiles, and can be set to operate autonomously or be integrated into a defensive suite.

The design uses a single-head system on helicopters and smaller fixed-wing aircraft, and a dual-head installation for large aircraft. U.S. MC-130 and AC-130 transport aircraft are being modified for installation of the AAQ-24.

It should be noted that many applications for DIRCM are for Special Forces aircraft. Details regarding numbers of aircraft are not readily available and can only be estimated, particularly for installations outside the U.S.



MH-60 helicopter helps drive need for AAQ-24.

Source: U.S. Army

The Pentagon plans to spend about \$1 billion through FY16 on LAIRCM procurement for various Air Force aircraft, declaring that its long-range desire is to equip a total of 444 aircraft with the system. And the U.S. Navy's Advanced Tactical Aircraft Protection Systems Program Office recently purchased LAIRCM for the Marines' CH-53E Sea Stallion aircraft.

Based on a projection of the FY12 defense budget and including the likelihood of additional orders for non-U.S. applications, some 350 LAIRCM should be produced through 2020.

The next 10 years should see steady high rates of production of the ALQ-212/AAR-57 for a wide variety of aircraft.

Production of the CMWS (mostly for the SIIRCM application, but also, presumably, for some stand-alone purchases) is proceeding under a five-year indefinite delivery/indefinite quantity contract awarded to BAE Systems in May 2006, with a maximum ceiling of \$1.4 billion.

Since the start of the SIIRCM program, more than \$1 billion has been spent on system development and procurement. The U.S. Army is equipping every helicopter operating in Iraq and Afghanistan with the CMWS. Still, the most significant long-term production will result from its association with the countermeasures system.

## Analysis 1

### ***Radar Warning Receivers and ESM Systems***

Used to detect radar and radar-guided missiles within an aircraft's immediate vicinity, radar warning receivers (RWRs as well as missile warning receivers MWRs) are continually being upgraded with greater RF sensitivity and computer processing speed. Newer RWRs, with extended detection range and more processor memory, can identify and locate a larger number of threat signals, including those categorized as low probability of intercept.

RWRs detect, analyze, and clarify more complex signals, alerting the pilot to serious threats and culling out signals that present little or no danger. Criteria for the threat libraries are based on the worst-case scenarios that would be valid in most situations. However, when the pilot is flying in a threat-saturated environment, an RWR system can handle only a limited number of threat scenarios, and some must go unanswered.

ESM systems intercept and identify enemy signals and locate their source. As technology has advanced, the RWR has taken on the characteristics of ESM systems. Many of the systems in this segment, for all intents and purposes, share some common functions. Some of these systems – like the EuroDASS Praetorian – are really suites, combining many EW functions.

The EuroDASS Praetorian self-protection systems provides electronic support measures (ESM), electronic countermeasures (ECM), missile warning, and towed decoy for the Eurofighter Typhoon fighter aircraft. The system is standard equipment on the Typhoon for all member nations participating in the program. As of early 2012, these nations include the U.K., Germany, Italy, Austria, Spain, and Saudi Arabia.

The most recent contract for the system was awarded in September 2010. Worth \$613.2 million, the order calls for system production for all the 112 Tranche 3A Eurofighter Typhoon combat aircraft on order for the air forces of the U.K., Germany, Italy, and Spain. First deliveries are scheduled for mid-2012.

Though total numbers of Typhoon aircraft to be produced over the next 10 years has risen and fallen as the financial outlooks of the participating nations have gone through various strains, steady production is highly likely through the forecast period.

The next 10 years should see steady production of the EuroDASS Praetorian system for applications to newly built Typhoon aircraft.

The Sky Guardian 2000 RWR is a key part of the Helicopter Integrated Defensive Aids Suite (HIDAS). HIDAS is installed on the U.K.'s Future Lynx (recently renamed AW159 Lynx Wildcat) helicopter. This one

application should be more than enough to ensure steady production of the RWR through the forecast period.

The original plan called for AgustaWestland to build 70 of the upgraded helicopters for the British military, including 40 helicopters for the British Army and 30 for the Royal Navy. The MoD recently cut the number of aircraft to a total of 62 units: 34 for the Royal Army and 28 for the Royal Navy.

A system derived from HIDAS may boost production of this RWR. As part of an upgrade of its Puma helicopter fleet, the RAF, in November 2009, selected the Defensive Aids Suite (DAS) produced by SELEX Galileo based on HIDAS technology.

In June 2010, SELEX Galileo was awarded a contract to supply its HIDAS derivative, DAS, for mounting on the RAF's Chinook Mk 2 and Mk 3 helicopters to meet an Urgent Operational Requirement.

### ***Naval EW Programs***

Because of their size, relative slow speed compared to aircraft, and their ubiquitous presence in some of the world's most dangerous waters, the need for advanced electronic self-protection for ships will only steadily rise during the next 10 years.

The U.S. Navy's Ship Self-Defense System (SSDS) is a program that integrates self defense equipment, particularly sensors and electronic countermeasures, into a single combat/protection system. The program focuses on developing techniques to integrate equipment that has already been developed and is in use, such as radars and weapons systems.

While early versions of the SSDS have been installed, the big story for the system is still development. RDT&E funding is firmly in place for the next several years. For FY12, more than \$71.2 million will be spent on the program.

Four classes of U.S. Navy aircraft carriers and expeditionary ships carry the SSDS. The service plans to install, or has installed, the SSDS Mk 2 open architecture upgrade on the USS *Theodore Roosevelt*, the USS *Harry S. Truman*, and the USS *Ronald Reagan*. Upgrades are also planned for the USS *San Antonio* and the USS *Tarawa*.

Based on a projection of the FY12 defense budget, the U.S. Navy over the next 10 years will likely spend \$414 million on SSDS development and maturation.

The next 10 years will likely see steady production of the SRBOC ship chaff and flare launcher to equip new-build warships in many countries. SRBOC has also been chosen as the launcher component of the NULKA



## Analysis 1

system. NULKA, a joint U.S.-Australian project, uses the SRBOC to launch rocket-propelled RF jammers.

U.S. production primarily supports construction of the DDG-51 Arleigh Burke class destroyers and LPD-17 amphibious ships. U.S. government-sanctioned FMS production will primarily support KDX, Kongo,

MEKO, and F-100 construction. F-100 construction has been expanded via a sale to Australia.

For more detailed information on any of these, and other EW systems, please see the individual reports in the *Electronic Warfare Forecast*.

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## Competitive Environment



Chaff Deployed from USAF Aircraft

Source: USAF

**Market Forces.** As multiple contracts awarded in the past year have shown, there is a steady need for production of the EW workhorse systems that have become all but indispensable over the past few years. These include communications and radar jammers of all kinds, as well as just about any system capable of countering anti-aircraft missiles. Here, competition is not restricted to just those companies capable of advancing sweeping, next-generation concepts.

The top five manufacturers in this analysis are Northrop Grumman, ITT Corp, BAE Systems, Raytheon, and the SELEX Galileo division of Finmeccanica.

Purchases of new platforms and upgrades of old platforms in the U.S., Europe, and the Middle East will provide fertile ground for these major players and their proven, battle-tested EW systems.

The worldwide production of everything from new tactical jet fighters, helicopters, and large transport aircraft to naval vessels of every size will be by far the steadiest source of opportunity for producers of every kind of EW system in the years ahead. While some of these new platforms such as the F-35 JSF and the Eurofighter Typhoon will be a transforming factor in the EW market, with the rise of integrated technology built directly into aircraft, many applications will draw on the

vast array of battle-tested and upgraded systems that have already been in use for some time.

### ***Large Number and Wide Variety of Platforms Provide Steady Opportunity***

Forecast International's Military Aircraft group estimates that close to 3,023 new fighter aircraft will be produced over the next 10 years. Most of the Western nations are currently beginning a major re-equipment cycle, and this market segment will be a very healthy one well into the next decade. Advancements in weapons, sensors, cockpit design, and performance have made the newer aircraft more effective than older models in performing the same missions, and nearly all are designed to be multirole aircraft, providing a renewed need for next-generation EW systems.

Among naval systems, relatively smaller vessels (as compared to aircraft carriers and battleships) will continue to be tasked with missions that bring them closer to hostile shores. These activities require the advanced capabilities and self-protection that ESM and countermeasure systems provide. On warships, it has become vital to integrate data presented by sonar with electronic support measures (ESM) and radar information. The early detection of an enemy missile launch adds precious seconds to the warning time,

## Analysis 1

permitting chaff clouds to be deployed and active jamming to be initiated.

Production of EW systems will, of course, not be limited to new platforms. Many sweeping upgrade programs for land, air, and sea platforms will provide more steady opportunity through the forecast period.

Nations are being forced to operate ships for much longer than the currently accepted 30-year lifespan. It is likely that the lifespan will increase to 40 or 50 years. During this period, the rapid advance of technical capabilities will require at least one, and probably several, "midlife upgrades" if the ships are to remain viable surface combatants.

### *Increasing Cost to Compete Offset by Strategic Partnerships*

Northrop Grumman, ITT Corp, BAE Systems, Raytheon, and SELEX Galileo will likely remain among

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the first choices for defense planners as they have already accomplished much in RDT&E and production for naval ESM, as well as all the other market segments associated with the EW world.

Joint ventures within these companies and countless other, relatively smaller EW firms will provide perhaps the only avenue to enter into long-established, lucrative programs.

The need to supply active, military forces and develop next-generation technology will require steady government funding and support. It is a simple fact and guiding principle that as long as expensive UAVs, fighter and transport aircraft, naval vessels, and ground vehicles are going to be sent into harm's way along with the men and women who operate them, they will require the best EW protection systems available.

## Market Statistics

This section breaks out the top five EW manufacturers as they relate to this analysis. The ranking is drawn entirely from the accumulated programs in the *Electronic Warfare Forecast*. Leaders are determined by the total 10-year value of the programs for which they have been designated the prime contractor. By its nature, this method does not account for the role of the various subcontractors that no doubt do an enormous amount of production and integration work. The ranking should then be seen as an indication of the relative importance of some leading EW programs over others and the prospects of these activities for the next 10 years.

Systems and programs addressed in this analysis are either in production or scheduled to begin production during the forecast period. Some programs are still in the early development phases. As always, some new programs will be introduced in the outer years that cannot be foreseen at this time. The long-term projections will be adjusted as developments warrant. Therefore, it is helpful to keep in mind the following clarifications when reviewing the breakdown of the companies presented in this analysis.

**Methodology.** This assessment of the overall EW market is based on a review of individual 10-year program and system forecasts. Each individual report is based on detailed research of data obtained from government agencies, industry sources, U.S. and foreign

publications, and individual contacts in the aerospace and electronics industries. This broad base of information is used to develop an overall picture of each system.

The market analysis combines the data from the individual reports in the *Electronic Warfare Forecast* to perform statistical analyses. The results of these analyses are presented in graphs that display the projected unit and value production by system and calendar year for the 2012 through 2021 timeframe.

The manufacturer listed for a program has been identified as the prime contractor for the purposes of this analysis, even though most programs probably involve substantial work from subcontractors as well. Note that the prime contractor sometimes consists of a joint venture or team. It is impossible to assign a particular market percentage value to a second source or subcontractor unless specific contracts have been awarded.

**Pricing of Systems.** It is extremely difficult to put an exact price on electronic warfare systems. Unit prices in government contracts vary depending on quantities ordered, adjustments for inflation, discounts, and additional services that may be included in contracts. In addition, Foreign Military Sales affect domestic prices. In order to perform an effective market analysis, however, it is necessary to have the best

## Analysis 1

possible estimates of unit prices. Our sources vary, but in many cases we have made estimates based on contract awards, funding, and numbers ordered.

Costs for RDT&E, however, do not always appear in the unit cost, especially if the development was government funded. In other cases, government funding documents have been sanitized. In those cases where no source information is available, we estimate the unit cost based on the type of system in question, its complexity, the prices of comparable systems, and a general understanding of the EW marketplace.

**Analysis.** Based on the sample systems in this report (not every EW system in the market), Forecast International estimates that \$29.4 billion will be spent on development and production of EW systems over the next 10 years. The market value estimate for 2012-2016 is \$15.3 billion, and for 2017-2021, \$14.1 billion. (It should be noted that many contract awards have been finalized, program goals defined, and new programs introduced, changing the overall figures from last year.)

While some companies, ranked singularly, have garnered a seemingly small market share, they may actually have major shares of joint venture programs. This is an indication of the trend toward, and value of, cooperation and joint effort in the defense electronics market. Acquisitions, mergers, and further restructurings are constantly changing the positions of companies in this ranking.

**Tables 1 and 2** provide a summary of the forecasts for all the EW systems covered in this analysis. **Figures 1 and 2** show the estimated demand for the systems and the associated values of production. **Tables 3 and 4** show unit and value of production totals for each company. Finally, **Figure 3** summarizes the companies that are projected to be the market leaders in value of production over the next 10 years.

Since only selected systems are covered in this survey, the figures for the European companies may be underestimates. These include those produced in small quantities at irregular intervals, those in early stages of development, and those for which security restrictions have prevented the release of sufficient data for analysis.

**Market Leaders.** Forecast International uses the parameter of production value to determine market leaders in this analysis, since it is considered an accurate and quantifiable representation of the market. Below are individual discussions of the top five manufacturers or teams of manufacturers of the market sample covered in this analysis.

### 1 – Northrop Grumman

**Projected 10-Year Market Share:**

**27.46 percent**

**Projected 10-Year Sales:**

**\$8.0 billion**

While applications of Northrop Grumman's Large Aircraft IR Countermeasures (LAIRCM) system for the U.S. Air Force aircraft are expected to lead the way, the system is also expected to be installed on a growing number of NATO and U.S. Navy aircraft.

The company in March 2010 announced that the Department of the Navy's CH-53E heavy-lift helicopter fleet will continue to receive new LAIRCM self-protection systems following the Pentagon's decision to authorize full-rate production of the units. The decision allows Naval Air Systems Command to continue procurement of the system known as Department of Navy LAIRCM (DoN LAIRCM) system, which includes the Viper laser and the newest generation jam head and missile warning sensor technology.

The U.K. Ministry of Defence in May 2010 awarded Northrop Grumman a contract to provide in-service support for LAIRCM used by the U.K. armed forces in current operations. The \$152 million, three-year contract will include spares, repairs, logistic maintenance, engineering, sustainment, and training. U.K.-based repair and maintenance services for LAIRCM will be provided at Northrop Grumman's U.K. diagnostic and maintenance support facility.

Based on a projection of the FY12 defense budget and including the likelihood of additional orders for non-U.S. applications, some 350 LAIRCM should be produced through 2020.

The next 10 years should see steady production of Northrop Grumman's AAQ-24 directed infrared countermeasure (DIRCM) system for the U.S. military and an international clientele. In September 2010, the U.S. Defense Security Cooperation Agency notified Congress of a possible FMS to Canada of eight DIRCMs as well as associated equipment and services for CH-47F helicopters. Elsewhere, Germany has made a move to have the system installed on government VIP aircraft.

The system is currently installed or scheduled for installation on several hundred military aircraft, ranging from 40 large fixed-wing to small rotary platforms. Under the name Nemesis, the system is in strong demand in the United Kingdom and Australia.

## Analysis 1

The Pentagon's FY12 budget includes \$63.2 million for DIRCM purchases through 2016 for the Navy alone. Aircraft types that will receive the system include UH-1Y, MU-22, CH-35, MH-60R/S, and AH-1Z platforms.

The AAQ-24 can be adapted to various-size aircraft and mission profiles, and can be set to operate autonomously or be integrated into a defensive suite. The design uses a single-head system on helicopters and smaller fixed-wing aircraft, and a dual-head installation for large aircraft. U.S. MC-130 and AC-130 transport aircraft are being modified for installation of the AAQ-24.

### 2 – BAE Systems

**Projected 10-Year Market Share:**

**10.4 percent**

**Projected 10-Year Sales:**

**\$3.0 billion**

BAE Systems' ALQ-212 Advanced Threat Infrared Countermeasures (ATIRCM) system and the AAR-57 Common Missile Warning System (CMWS) make up a U.S. Army aircraft protection system known as the Suite of Integrated Infrared Countermeasures (SIIRCM). Aircraft can receive a combined suite or just the AAR-57 CMWS. The next 10 years should see steady high rates of production of these systems for a wide variety of aircraft.

Production of the CMWS (mostly for the SIIRCM application, but also, presumably, for some stand-alone purchases) is proceeding under a five-year indefinite delivery/indefinite quantity contract awarded to BAE Systems in May 2006, with a maximum ceiling of \$1.4 billion.

Since the start of the SIIRCM program, more than \$1 billion has been spent on system development and procurement. The U.S. Army is equipping every helicopter operating in Iraq and Afghanistan with the CMWS. Still, the most significant long-term production will result from its association with the countermeasures system.

For the purposes of this report, and its focus on the two systems (ATIRCM and CMWS) as part of the SIIRCM suite, the two systems are combined in the forecast, and all production for the ALQ-212 ATIRCM includes production for the AAR-57 CMWS.

The next 10 years should see high rates of production for the company's ALE-55 fiber-optic towed decoy (FOTD) for a variety of U.S. Navy airborne applications. Low-rate initial production (LRIP) for its F/A-18E/F application has begun as a replacement for the older ALE-50.

The Pentagon in June 2010 awarded prime contractor BAE Systems a \$30.9 million modification to a previously awarded contract for the LRIP ALE-55 subsystems and associated technical support and non-recurring engineering for the U.S. Navy and Royal Australian Air Force F/A-18E/F aircraft.

U.S. procurement funding for ALE-55 is provided in the DoD's Airborne Expendable Countermeasures (AECM) program that purchases countermeasure self-protection devices for all Navy and Marine Corps tactical, rotary, and other fixed-wing aircraft. For FY12, \$18.2 million is scheduled to be spent on ALE-55 procurement.

BAE Systems is also prime contractor for the ALE-47(V) Countermeasures Dispenser System (CMDS). The DSCA notified Congress in November 2011 of a possible Foreign Military Sale to the government of Indonesia for the regeneration and upgrade of 24 F-16C/D Block 25 aircraft and associated equipment, parts, training, and logistical support for an estimated cost of \$750 million. Included in the request is an order for the ALE-47 system.

### 3 – ITT Corp

**Projected 10-Year Market Share:**

**9.73 percent**

**Projected 10-Year Sales:**

**\$2.8 billion**

ITT has taken a lead role in the production of systems to counter IEDs. Joint Counter Radio-Controlled Improvised Explosive Device (RCIED) Electronic Warfare (JCREW) jammers will be produced in steady numbers over the next several years. The U.S. has been in the process of developing counter-IED jammers in a spiral plan to reduce in number the types of systems on the battlefield. The plan allows the military to take advantage of the latest advancements in jammer technology. JCREW Spiral 2.1 and 3.1 jammers are the latest developments in this effort. The next big phase for JCREW will be called 3.3.

Well over 12,000 JCREW Spiral 2.1 jammers have been produced in recent years. The original contract calling for 10,000 jammers has been fulfilled, and the U.S. Department of Defense has issued a modification to that contract calling for an additional 15,000 systems. In addition, the U.S. has awarded numerous contracts for Spiral 3.1 jammers. The first of these is for JCREW Spiral 3.1 dismantled jammers. Unlike the Spiral 2.1 vehicle-mounted jammers, Spiral 3.1 jammers will be carried by dismantled soldiers.

In August 2010, ITT was awarded a \$455 million firm-fixed-price, cost-plus-fixed-fee, cost-only indefinite delivery/indefinite quantity contract for production of

## Analysis 1

up to 5,000 JCREW 3.2 mounted systems. Work is expected to be completed by September 2014.

The U.S. Navy in December 2010 exercised the third option of the JCREW 3.3 contract and awarded ITT sole development of the system.

The next several years should see steady production of ITT's ALQ-214 Integrated Defensive Electronic Countermeasures (IDECM) Radio Frequency Countermeasures (RFCM) system.

The primary platform for the ALQ-214 is the U.S. Navy's F/A-18E/F Super Hornet. Through the ALQ-214's association with the jet fighter, an export market has been established. ITT in August 2010 was awarded a \$9.8 million contract that saw the ALQ-214 ordered for the U.S. as well as the governments of Australia, Switzerland, Finland, and Taiwan. Work is expected to be completed in August 2015.

As the August 2010 contract suggests, export sales of the ALQ-14 are incorporated into U.S. Navy orders for the system.

The next 10 years should see steady production of the ALQ-211 Suite of Integrated RF Countermeasures / Advanced Integrated Defensive EW Suite (SIRFC / AIDEWS). Besides many orders for the suite, the program also generates significant contracts for upgrades.

The Pentagon's DSCA in August 2010 notified the U.S. Congress of a possible FMS to the Royal Air Force of Oman of 18 Lockheed Martin F-16C/D Block 50/52 combat aircraft. Among many other systems, the order would include 22 ALQ-211 units.

In December 2011, the DSCA notified the U.S. Congress of a possible FMS to the government of Iraq for 18 F-16IQ aircraft and associated equipment, parts, weapons, training, and logistical support, for an estimated cost of \$2.3 billion.

The Iraqi government has also requested a sale of 22 ALQ-211 AIDEWS to be included in this order.

#### 4 – Raytheon

**Projected 10-Year Market Share:**

**7.11 percent**

**Projected 10-Year Sales:**

**\$2.0 billion**

Raytheon's Miniature Air Launched Decoy (MALD) effort offers a family of systems capable of performing decoy, jamming, and missile interception missions. Work on the jammer version, known as MALD-J, should enable low-rate initial production to begin around 2012-2013. The U.S. Air Force may purchase

3,000 MALDs, with procurement split between the decoy and jammer versions.

The U.S. Navy and Army could add an unknown number of units to this total. The U.S. Army is showing interest in a cruise missile interceptor version of MALD, as well as one for use as an anti-armor weapon. Versions could also be produced for use as target drones and to perform stand-off strike missions. The strike version may be installed on unmanned air vehicles (UAVs). Sales to foreign customers could also help to push up the MALD's overall production totals.

Raytheon in May 2011 was awarded an \$82.9 million firm-fixed-price contract modification for MALD LRIP, Lot four.

Raytheon's ALR-67(V)3 radar warning receiver is in steady demand on the international marketplace, both for new-build aircraft and for upgrades of older F/A-18s. The U.S. is purchasing the system for all of its F/A-18E/Fs. In total, 213 of these aircraft are projected to be delivered through 2019. Australia is purchasing the system for 24 new F/A-18Fs, as well as upgrading older aircraft with the system. Other customers of the system include Canada, Finland, and Switzerland.

In April 2010, Raytheon was awarded an \$89.5 million contract from the U.S. Navy for continued production of its ALR-67(V)3 for the Naval Air Systems Command as well as international customers as part of the FMS program. Deliveries for this lot will begin in January 2012 and are expected to be completed by December 2012.

In November 2010, Raytheon reported that it had delivered its 500th ALR-67(V)3 to the U.S. Navy.

Raytheon's Ship Self-Defense System (SSDS) program integrates self-defense equipment, particularly sensors and electronic countermeasures, into a single combat / protection system. The program focuses on developing techniques to integrate equipment that has already been developed and is in use, such as radars and weapons systems. For FY12, more than \$71.2 million will be spent on the program.

Four classes of U.S. Navy aircraft carriers and expeditionary ships carry the SSDS. The service plans to install, or has installed, the SSDS Mk 2 open architecture upgrade on the USS *Theodore Roosevelt*, the USS *Harry S. Truman*, and the USS *Ronald Reagan*. Upgrades are also planned for the USS *San Antonio* and the USS *Tarawa*.

Based on a projection of the FY12 defense budget, the U.S. Navy over the next 10 years will likely spend \$414 million on SSDS development and maturation.

## Analysis 1

**5 – Finmeccanica (SELEX Galileo)**  
**Projected 10-Year Market Share:**  
**3.15 percent**  
**Projected 10-Year Sales:**  
**\$927 million**

The EuroDASS Praetorian airborne self-protection system is produced by a consortium with Finmeccanica's SELEX Galileo acting as the prime contractor. Other members include Italy's Elettronica, Spain's Indra, and Germany's EADS Defence Electronics.

The system provides electronic support measures (ESM), electronic countermeasures (ECM), missile warning, and towed decoy for the Eurofighter Typhoon fighter aircraft. Praetorian is standard equipment on the Typhoon for all member nations participating in the program. As of early 2012, these nations include the U.K., Germany, Italy, Austria, Spain, and Saudi Arabia.

The most recent contract for the system was awarded in September 2010. Worth \$613.2 million, the order calls for system production for all the 112 Tranche 3A Eurofighter Typhoon combat aircraft on order for the air forces of the U.K., Germany, Italy, and Spain. First deliveries are scheduled for mid-2012.

Though total numbers of Typhoon aircraft to be produced over the next 10 years has risen and fallen as the financial outlooks of the participating nations have gone through various strains, steady production is highly likely through the forecast period.

In July 2010, Italy announced that it would be cutting its order for the third Tranche of 46 Typhoons (down to 21) as part of a national debt-reduction plan.

The next 10 years should see production of 429 EuroDASS Praetorian systems for applications to newly built Typhoon aircraft. The estimated 10-year value of this work is \$858 million.

**Manufacturer Varies**  
**Projected 10-Year Market Share:**  
**17.72 percent**  
**Projected 10-Year Sales:**  
**\$5.2 billion**

The "Manufacturer Varies" portion of this analysis represents over a dozen mostly U.S. RDT&E programs. Representative of the kind of work carried out in these programs is the U.S. Air Force's Range Improvement program. This effort will receive relatively steady levels of funding over the next several years to carry out a variety of RDT&E missions. The program supports operational testing of weapons systems under simulated conditions for aircraft as varied as the emerging F-35

Joint Strike Fighter and the electronic warfare workhorse Compass Call.

Range Improvement covers a multitude of smaller RDT&E efforts, all aiming to improve the effectiveness of tactical aircraft from an electronic standpoint. Work within the Range Improvement program is carried out within two separately funded efforts. The first is the Combat Training Ranges program (PE#0604735F), which allocates funding for Range Improvement activities through Project 2286 - Combat Training Range Equipment. This project supports the development and procurement of the electronic, telecommunications, and instrumentation systems used at global testing and training ranges. A total of \$102.5 million has been allocated for this segment in the FY11 budget for the years 2011 through 2016.

Threat Simulator Development (PE#0604256F), the second effort, appropriates funding for Range Improvement efforts through Project 3321 - Electronic Warfare Ground Test Resources. This project supports ground test capability and risk-reduction efforts. Over the next five years, \$108.3 million has been budgeted for this work.

Based on a projection of these budgets, \$452 million will likely be spent on the Range Improvement program over the next 10 years.

**Contractor Specifics.** In the following tables, an attempt has been made to allocate the funding for multi-contractors' programs to the individual members of the consortia in question. These are very rough estimates, but they do tend to illustrate the dominance of certain companies within this sector. Market share is calculated on the basis of the total for the EW sector. The figures provided are approximate and open to debate. For this reason, the Forecast International survey focuses on prime manufacturers and single sources for a more direct bearing on a company's impact on the overall market.

Multi-contractor consortia have always been a great place for a smaller company to start if it wants to enter the market as a subcontractor or component supplier. The potential pitfalls, however, are twofold: first, this is an area often used for offsets or for industrial technology transfer agreements to attract a customer, suggesting that newcomers will be from the client's country rather than a third party; and second, newcomers to the industry will be selected to supply ancillary units rather than basic technology.

**A Note on the Outer Years.** It should be kept in mind that our 10-year forecast does not reflect new activity in the outer years. Certainly, new programs will develop during the forecast period, bringing new starts

## Analysis 1

to production. However, since we cannot know yet what these items will be and thus cannot estimate their value realistically, we do not include them in the database and make no allowances for them in our 10-year forecast figures.

As they are based only on established programs, the projected market figures in the outer years most likely underestimate the actual size of the market. When

considering these figures, one should keep in mind that by the end of the reporting period, there will be a need to upgrade and enhance many of the EW systems currently under development or entering production. In particular, newly developing IR/EO and IRCM programs will be under constant development. Such programs have not yet been formalized, but they are certain to raise the value of the overall market significantly.

\* \* \*

## Analysis 1

**Table 1**  
**The Market for Electronic Warfare Systems**  
**Unit Production by Headquarters/Company/Program**  
**2012 - 2021**

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>Alliant Techsystems Inc (ATK) (HQ)</b>												
<b>Alliant Techsystems - Missile Products, Clearwater</b>												
<b>AAR-47 C-17 &lt;&gt; United States &lt;&gt; Air Force</b>												
	12	12	8	4	4	4	4	4	4	4	60	
<b>AAR-47 C-130 J -30 &lt;&gt; Iraq &lt;&gt; Air Force</b>												
	3	1	0	0	0	0	0	0	0	0	4	
<b>AAR-47 C-130 J -30 &lt;&gt; Israel &lt;&gt; Air Force</b>												
	3	3	0	0	0	0	0	0	0	0	6	
<b>AAR-47 KC-130 J &lt;&gt; Kuwait &lt;&gt; Air Force</b>												
	2	0	0	0	0	0	0	0	0	0	2	
<b>AAR-47 CV-22/MV-22 &lt;&gt; United States &lt;&gt; Department of Defense</b>												
	38	37	35	35	35	36	35	29	25	25	330	
HQ Total	58	53	43	39	39	40	39	33	29	29	402	
<b>BAE Systems plc (HQ)</b>												
<b>BAE Systems Inc, Electronic Solutions, Nashua</b>												
<b>AAR-57 CMWS United States &lt;&gt; Army</b>												
	75	45	24	24	24	24	24	24	24	24	312	
<b>ALE-55 United States &lt;&gt; Navy</b>												
	500	400	500	400	600	500	500	500	500	500	4900	
<b>ALQ-212 AH-64/H-60/S-70 UH-60/CH-47 &lt;&gt; United States &lt;&gt; Army</b>												
	180	150	130	130	130	100	100	100	100	100	1220	
<b>ALR-56 C F-15 K &lt;&gt; Korea, South &lt;&gt; Air Force</b>												
	3	0	0	0	0	0	0	0	0	0	3	
<b>ALR-56 M C-130 J &lt;&gt; United States &lt;&gt; Air Force</b>												
	23	19	10	12	12	14	11	10	11	10	132	
<b>ALR-56 M C-130 J &lt;&gt; India &lt;&gt; Air Force</b>												
	5	0	0	0	0	0	0	0	0	0	5	
<b>ALR-56 M F-16 C/D &lt;&gt; Morocco &lt;&gt; Air Force</b>												
	4	6	0	0	0	0	0	0	0	0	10	
<b>ALR-94 F-22A &lt;&gt; United States &lt;&gt; Air Force</b>												
	3	0	0	0	0	0	0	0	0	0	3	
Subtotal	793	620	664	566	766	638	635	634	635	634	6585	
<b>BAE Systems Inc, Electronic Solutions, Austin</b>												
<b>ALE-47 F/A-18 E/F &lt;&gt; United States &lt;&gt; Navy</b>												
	22	13	24	0	0	0	0	0	0	0	59	
<b>ALE-47 EA-18G &lt;&gt; United States &lt;&gt; Navy</b>												
	22	13	24	0	0	0	0	0	0	0	59	



Analysis 1

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>ALE-47 MH-60 R &lt;&gt; United States &lt;&gt; Navy</b>												
	33	28	30	30	28	20	0	0	0	0	169	
<b>ALE-47 CV-22/MV-22 &lt;&gt; United States &lt;&gt; Armed Services</b>												
	39	40	37	29	25	23	23	23	23	21	283	
Subtotal	116	94	115	59	53	43	23	23	23	21	570	
<b>BAE Systems Inc, Land &amp; Armaments, Arlington</b>												
<b>SRBOC MK 36 KDX &lt;&gt; Korea, South &lt;&gt; Navy</b>												
	1	0	0	1	1	1	0	0	0	0	4	
<b>SRBOC MK 36 LPD-17 &lt;&gt; United States &lt;&gt; Navy</b>												
	4	4	0	4	0	0	0	0	0	0	12	
<b>SRBOC MK 36 DDG-51 &lt;&gt; United States &lt;&gt; Navy</b>												
	0	4	8	4	8	4	4	4	4	4	44	
<b>SRBOC MK 36 F-100 &lt;&gt; Australia &lt;&gt; Navy</b>												
	0	0	4	0	4	4	0	0	0	0	12	
Subtotal	5	8	12	9	13	9	4	4	4	4	72	
<b>BAE Systems plc, London</b>												
<b>Sky Guardian Armed Services</b>												
	4	4	4	4	4	4	5	5	4	4	42	
<b>Sky Guardian 2000 AH-64 D WAH-64 &lt;&gt; United Kingdom &lt;&gt; Armed Services</b>												
	14	10	10	8	8	8	8	8	8	8	90	
Subtotal	18	14	14	12	12	12	13	13	12	12	132	
HQ Total	932	736	805	646	844	702	675	674	674	671	7359	
<b>Chemring Countermeasures (HQ)</b>												
<b>Chemring Countermeasures, Salisbury</b>												
<b>Sea Gnat United Kingdom &lt;&gt; Navy</b>												
	100	100	100	100	100	100	100	100	100	100	1000	
<b>Sea Gnat Australia &lt;&gt; Navy</b>												
	75	75	75	75	75	75	75	75	75	75	750	
<b>Sea Gnat Navy</b>												
	110	100	90	80	80	80	80	90	100	100	910	
HQ Total	285	275	265	255	255	255	255	265	275	275	2660	
<b>Cobham plc (HQ)</b>												
<b>Cobham Sensor and Antenna Systems, Lansdale</b>												
<b>ALQ-99 EA-6 B/EA-18G &lt;&gt; United States &lt;&gt; Navy</b>												
	30	16	27	27	27	0	0	0	0	0	127	
HQ Total	30	16	27	27	27	0	0	0	0	0	127	

## Analysis 1

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>Elbit Systems Ltd (HQ)</b>												
<b>Elisra Group, Bene Baraq</b>												
<b>SPS Series Air Force</b>												
	12	10	8	10	8	8	8	8	8	8	88	
HQ Total	12	10	8	10	8	8	8	8	8	8	88	
<b>Electromashina (HQ)</b>												
<b>Electromashina, Chelyabinsk</b>												
<b>SHTORA-1 T-84 &lt;&gt; Ukraine &lt;&gt; Army</b>												
	38	46	46	46	49	51	51	51	35	35	448	
<b>SHTORA-1 T-90 &lt;&gt; Russian Federation &lt;&gt; Army</b>												
	105	67	19	25	31	27	25	25	31	31	386	
HQ Total	143	113	65	71	80	78	76	76	66	66	834	
<b>Elettronica SpA (HQ)</b>												
<b>Elettronica SpA, Rome</b>												
<b>ELT/572 Italy &lt;&gt; Air Force</b>												
	12	10	8	8	6	8	8	10	8	6	84	
HQ Total	12	10	8	8	6	8	8	10	8	6	84	
<b>Esterline Technologies Corp (HQ)</b>												
<b>Wallop Defence Systems, Middle Wallop</b>												
<b>Superbarricade Navy</b>												
	14	12	14	12	12	12	12	12	12	12	124	
<b>Ultrabarricade Navy</b>												
	16	14	16	14	14	14	14	14	14	14	144	
HQ Total	30	26	30	26	26	26	26	26	26	26	268	
<b>European Aeronautic Defence and Space Co (EADS) NV (HQ)</b>												
<b>EADS France SAS, Paris</b>												
<b>Dagaie/Sagaie France &lt;&gt; Navy</b>												
	2	4	2	4	2	2	2	3	2	2	25	
<b>Dagaie/Sagaie Navy</b>												
	6	4	6	4	6	4	4	5	4	4	47	
HQ Total	8	8	8	8	8	6	6	8	6	6	72	
<b>Finmeccanica SpA (HQ)</b>												
<b>SELEX Galileo, Edinburgh</b>												
<b>EuroDASS Typhoon EFA &lt;&gt; Air Force</b>												
	59	58	51	50	41	42	40	36	32	20	429	
<b>Outfit DLH Navy</b>												
	4	6	4	6	6	6	8	10	8	6	64	

## Analysis 1

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>Siren Navy</b>												
	30	20	30	20	20	30	20	20	20	20	230	
Subtotal	93	84	85	76	67	78	68	66	60	46	723	
<b>SELEX Galileo Ltd, Basildon</b>												
<b>Halo United Kingdom &lt;-&gt; Army</b>												
	4	4	4	4	4	4	4	4	4	4	40	
<b>Halo Multi-agencies</b>												
	10	10	8	8	10	12	12	12	12	12	106	
Subtotal	14	14	12	12	14	16	16	16	16	16	146	
HQ Total	107	98	97	88	81	94	84	82	76	62	869	
<b>General Dynamics Corp (HQ)</b>												
<b>General Dynamics C4 Systems, Scottsdale</b>												
<b>MLQ-40 4 United States &lt;-&gt; Army</b>												
	41	38	38	36	36	36	36	36	36	0	333	
<b>MLQ-40 Prophet Enhanced United States &lt;-&gt; Army</b>												
	25	16	14	10	10	14	12	10	10	10	131	
HQ Total	66	54	52	46	46	50	48	46	46	10	464	
<b>Goodrich Corp (HQ)</b>												
<b>Goodrich ISR Systems, Danbury</b>												
<b>AVR-2 CV-22 &lt;-&gt; United States &lt;-&gt; Air Force</b>												
	8	7	5	6	2	0	0	0	0	0	28	
<b>AVR-2 MV-22 &lt;-&gt; United States &lt;-&gt; Armed Services</b>												
	31	33	32	23	23	23	23	19	0	0	207	
<b>AVR-2 AH-64 D &lt;-&gt; Armed Services</b>												
	27	30	20	43	28	20	12	12	11	11	214	
<b>AVR-2 B UH-60 M &lt;-&gt; Armed Services</b>												
	82	93	82	78	74	77	72	72	72	72	774	
HQ Total	148	163	139	150	127	120	107	103	83	83	1223	
<b>ITT Exelis Inc (HQ)</b>												
<b>ITT Exelis, Electronic Systems, Clifton</b>												
<b>ALQ-211 SIRFC United States &lt;-&gt; Special Ops</b>												
	13	15	15	15	15	15	15	15	13	10	141	
<b>ALQ-211 SIRFC NH 90 &lt;-&gt; Armed Services</b>												
	14	16	18	20	24	24	20	20	20	20	196	
<b>ALQ-214 F/A-18 E/F &lt;-&gt; United States &lt;-&gt; Navy</b>												
	21	22	20	20	16	12	14	12	10	10	157	
<b>ALQ-227 EA-18G &lt;-&gt; United States &lt;-&gt; Navy</b>												
	22	13	24	0	0	0	0	0	0	0	59	

## Analysis 1

ESTIMATED CALENDAR YEAR UNIT PRODUCTION											
	High Confidence				Good Confidence			Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
<b>JCREW Jammer Spiral 3.3 United States &lt;&gt; Army</b>											
	3000	3000	3000	4000	4000	3000	2000	3000	2000	3000	30000
HQ Total	3070	3066	3077	4055	4055	3051	2049	3047	2043	3040	30553
<b>Irvin Industries Inc (HQ)</b>											
<b>Irvin-GQ, Llangeinor</b>											
<b>DLF 3 United Kingdom &lt;&gt; Navy</b>											
	20	20	22	24	22	20	20	20	20	20	208
<b>DLF 3 Navy</b>											
	6	8	10	8	6	6	8	10	8	6	76
HQ Total	26	28	32	32	28	26	28	30	28	26	284
<b>Israel Aerospace Industries Ltd (IAI) (HQ)</b>											
<b>Elta Systems Ltd, Ashdod</b>											
<b>EL/L-8222 Israel &lt;&gt; Air Force</b>											
	10	10	10	10	10	10	10	10	10	10	100
<b>EL/L-8222 Air Force</b>											
	18	16	14	12	10	12	10	12	14	14	132
<b>EL/L-8300 Multi-agencies</b>											
	3	2	2	2	2	2	3	3	2	2	23
<b>EL/M-2160 (V1)</b>											
	6	7	6	5	3	0	0	0	0	0	27
Subtotal	37	35	32	29	25	24	23	25	26	26	282
<b>IAI Elta Systems Group - Elta Technologies Division, Ashdod</b>											
<b>EL/W-2085 GV/500/550 Series G550</b>											
	0	0	0	1	0	0	0	0	0	0	1
<b>EL/W-2090 IL-76 &lt;&gt; India &lt;&gt; Air Force</b>											
	0	0	1	0	0	0	0	0	0	0	1
Subtotal	0	0	1	1	0	0	0	0	0	0	2
HQ Total	37	35	33	30	25	24	23	25	26	26	284
<b>Lockheed Martin Corp (HQ)</b>											
<b>Lockheed Martin Maritime Systems &amp; Sensors, Manassas</b>											
<b>BLQ-10 SSN-774 &lt;&gt; United States &lt;&gt; Navy</b>											
	1	1	1	1	1	1	2	2	0	0	10
<b>BLQ-10 SSN-688 &lt;&gt; United States &lt;&gt; Navy</b>											
	2	2	2	2	2	2	2	2	2	2	20
Subtotal	3	3	3	3	3	3	4	4	2	2	30
<b>Lockheed Martin Mission Systems &amp; Sensors, Owego</b>											
<b>ALQ-210 CH-148 &lt;&gt; Canada &lt;&gt; Navy</b>											
	10	8	0	0	0	0	0	0	0	0	18
<b>ALQ-210 MH-60 R &lt;&gt; United States &lt;&gt; Navy</b>											
	34	32	29	28	26	16	0	0	0	0	165

## Analysis 1

ESTIMATED CALENDAR YEAR UNIT PRODUCTION											
	High Confidence				Good Confidence			Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
<b>ALQ-217 United States &lt;&gt; Navy</b>											
	2	2	2	2	0	0	0	0	0	0	8
<b>APR-48 A AH-64 D &lt;&gt; Saudi Arabia &lt;&gt; Armed Services</b>											
	4	0	0	0	0	0	0	0	0	0	4
<b>APR-48 A AH-64 D &lt;&gt; United States &lt;&gt; Army</b>											
	12	0	9	27	18	2	0	0	0	0	68
<b>APR-48 A AH-64 D &lt;&gt; Taiwan &lt;&gt; Army</b>											
	8	0	0	0	0	0	0	0	0	0	8
<b>APR-48 A AH-64 D</b>											
	16	8	10	10	11	9	9	8	8	8	97
Subtotal	86	50	50	67	55	27	9	8	8	8	368
<b>Lockheed Martin Sippican, Marion</b>											
<b>Nulka MK 53 Navy</b>											
	50	40	30	40	50	40	50	40	40	40	420
Subtotal	50	40	30	40	50	40	50	40	40	40	420
HQ Total	139	93	83	110	108	70	63	52	50	50	818
<b>MBDA UK (HQ)</b>											
<b>MBDA UK, London</b>											
<b>Saphir Tiger HAD/Tiger HAP &lt;&gt; Spain &lt;&gt; Air Force</b>											
	4	5	5	3	0	0	0	0	0	0	17
<b>Saphir Tiger HAP/Tiger HAD &lt;&gt; France &lt;&gt; Air Force</b>											
	6	5	5	7	12	9	0	0	0	0	44
<b>Saphir Tiger UHT &lt;&gt; Germany &lt;&gt; Air Force</b>											
	10	12	12	12	10	0	0	0	0	0	56
<b>Saphir NH90 &lt;&gt; Spain &lt;&gt; Armed Services</b>											
	0	7	7	9	10	11	12	12	10	10	88
<b>Saphir NH90 &lt;&gt; Belgium &lt;&gt; Armed Services</b>											
	4	3	2	0	0	0	0	0	0	0	9
<b>Saphir NH90 &lt;&gt; Oman &lt;&gt; Armed Services</b>											
	6	8	0	0	0	0	0	0	0	0	14
<b>Saphir NH90 &lt;&gt; New Zealand &lt;&gt; Air Force</b>											
	3	2	2	0	0	0	0	0	0	0	7
<b>Saphir MRH90 &lt;&gt; Australia &lt;&gt; Armed Services</b>											
	8	9	12	0	0	0	0	0	0	0	29
<b>Saphir NH90 &lt;&gt; Armed Services</b>											
	5	5	8	13	14	15	24	24	24	15	147
<b>Saphir NH90 &lt;&gt; Armed Services</b>											
	3	5	6	8	10	6	0	0	0	0	38
<b>Saphir A400M &lt;&gt; Multi-agencies</b>											
	4	5	12	22	30	30	30	30	25	25	213
<b>Saphir NH90 NFH/TTH &lt;&gt; Italy &lt;&gt; Armed Services</b>											
	4	5	5	10	12	12	12	12	12	10	94
HQ Total	57	71	76	84	98	83	78	78	71	60	756

## Analysis 1

ESTIMATED CALENDAR YEAR UNIT PRODUCTION											
	High Confidence				Good Confidence			Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
<b>Northrop Grumman Corp (HQ)</b>											
<b>Northrop Grumman Aerospace Systems, Redondo Beach</b>											
<b>APR-39 A 2 CV-22 &lt;&gt; United States &lt;&gt; Air Force</b>											
	9	5	5	5	1	0	0	0	0	0	25
<b>APR-39 A 2 AH-1 Z &lt;&gt; United States &lt;&gt; Marine Corps</b>											
	18	19	27	27	27	10	5	0	0	0	133
<b>APR-39 A 2 UH-1 Y &lt;&gt; United States &lt;&gt; Marine Corps</b>											
	16	14	16	15	8	0	0	0	0	0	69
<b>APR-39 A 2 MV-22 &lt;&gt; United States &lt;&gt; Armed Services</b>											
	30	30	30	30	34	41	41	41	41	41	359
<b>APR-39 A 2 S-92/H-92</b>											
	6	4	4	5	5	4	5	5	5	5	48
<b>APR-39 A 4 AH-64 D &lt;&gt; Saudi Arabia &lt;&gt; Armed Services</b>											
	12	0	0	0	0	0	0	0	0	0	12
Subtotal	91	72	82	82	75	55	51	46	46	46	646
<b>Northrop Grumman Defensive Systems - San Jose Facility, San Jose</b>											
<b>APR-39 A 1 AH-64 &lt;&gt; Multi-agencies</b>											
	12	10	10	5	7	7	7	7	7	0	72
Subtotal	12	10	10	5	7	7	7	7	7	0	72
<b>Northrop Grumman Electronic Systems, Rolling Meadows</b>											
<b>AAQ-24 United States &lt;&gt; Armed Services</b>											
	30	40	30	20	30	20	20	18	16	16	240
<b>AAQ-24 Armed Services</b>											
	8	6	8	8	8	8	8	8	8	8	78
<b>ALQ-135 F-15 SG &lt;&gt; Singapore &lt;&gt; Air Force</b>											
	2	0	0	0	0	0	0	0	0	0	2
<b>ALQ-135 F-15</b>											
	6	10	10	10	0	0	0	0	0	0	36
<b>Laircm C-17/C-130/KC-135/C-5 &lt;&gt; United States &lt;&gt; Air Force</b>											
	25	50	25	50	25	30	40	30	25	25	325
Subtotal	71	106	73	88	63	58	68	56	49	49	681
<b>Northrop Grumman Electronic Systems, Linthicum</b>											
<b>AAR-54 Multi-agencies</b>											
	14	16	14	12	12	12	10	10	10	10	120
<b>APG-77 F-22A &lt;&gt; United States &lt;&gt; Air Force</b>											
	3	0	0	0	0	0	0	0	0	0	3
Subtotal	17	16	14	12	12	12	10	10	10	10	123
<b>Northrop Grumman Electronic Systems, Baltimore</b>											
<b>APG-81 F-35 &lt;&gt; Multi-agencies</b>											
	27	32	40	61	98	134	185	192	215	215	1199
Subtotal	27	32	40	61	98	134	185	192	215	215	1199

Analysis 1

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>Northrop Grumman Logistics Services Division, Baltimore</b>												
<b>ALQ-218 EA-18G &lt;&gt; United States &lt;&gt; Navy</b>												
	16	12	5	0	0	0	0	0	0	0	33	
Subtotal	16	12	5	0	0	0	0	0	0	0	33	
<b>Northrop Grumman Sperry Marine, Melville</b>												
<b>WLY-1 SSN-774 &lt;&gt; United States &lt;&gt; Navy</b>												
	1	1	1	1	1	1	2	2	1	1	12	
Subtotal	1	1	1	1	1	1	2	2	1	1	12	
HQ Total	235	249	225	249	256	267	323	313	328	321	2766	
<b>Raytheon Co (HQ)</b>												
<b>Raytheon Co, Waltham</b>												
<b>ALR-67 3 F/A-18 E/F &lt;&gt; United States &lt;&gt; Navy</b>												
	24	20	6	17	20	0	0	0	0	0	87	
<b>ALR-67 3 F/A-18 C/D &lt;&gt; Australia &lt;&gt; Air Force</b>												
	10	3	0	0	0	0	0	0	0	0	13	
<b>ALR-67 3 F/A-18 C/D &lt;&gt; Finland &lt;&gt; Air Force</b>												
	4	14	18	15	0	0	0	0	0	0	51	
<b>ALR-67 3 F/A-18 C/D &lt;&gt; Switzerland &lt;&gt; Air Force</b>												
	18	5	0	0	0	0	0	0	0	0	23	
<b>ALR-67 3 CF-18 C/D &lt;&gt; Canada &lt;&gt; Air Force</b>												
	18	14	0	0	0	0	0	0	0	0	32	
Subtotal	74	56	24	32	20	0	0	0	0	0	206	
<b>Raytheon Missile Systems, Tucson</b>												
<b>ADM-160B United States</b>												
	236	230	227	229	243	261	255	239	221	217	2358	
Subtotal	236	230	227	229	243	261	255	239	221	217	2358	
<b>Raytheon Missile Systems, Tucson</b>												
<b>ADM-160B</b>												
	50	101	123	145	167	152	206	194	201	187	1526	
Subtotal	50	101	123	145	167	152	206	194	201	187	1526	
<b>Raytheon Space &amp; Airborne Systems, El Segundo</b>												
<b>ALE-50 F/A-18 E/F/F-16/B-1 B &lt;&gt; Multi-agencies</b>												
	800	750	700	600	500	400	300	250	300	350	4950	
<b>ALR-69 A C-130/F-16/A-10/MH-53 &lt;&gt; United States &lt;&gt; Air Force</b>												
	15	17	18	17	16	16	16	18	18	18	169	
<b>APG-79 F/A-18 E/F &lt;&gt; United States &lt;&gt; Navy</b>												
	27	24	18	20	20	18	15	10	0	0	152	
<b>APG-79 EA-18G &lt;&gt; United States &lt;&gt; Navy</b>												
	22	13	24	0	0	0	0	0	0	0	59	

## Analysis 1

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>APG-79 F/A-18 E/F</b>												
	0	0	6	6	0	0	0	0	0	0	12	
Subtotal	864	804	766	643	536	434	331	278	318	368	5342	
HQ Total	1224	1191	1140	1049	966	847	792	711	740	772	9432	
<b>Saab AB (HQ)</b>												
Saab Security and Defence Solutions, Järfälla												
<b>BOL JAS 39 &lt;&gt; Sweden &lt;&gt; Air Force</b>												
	18	14	16	16	16	10	10	10	10	10	130	
<b>BOL Typhoon &lt;&gt; Air Force</b>												
	92	88	88	88	88	80	72	72	72	72	812	
HQ Total	110	102	104	104	104	90	82	82	82	82	942	
<b>Sierra Nevada Corp (HQ)</b>												
Sierra Nevada Corp, Sparks												
<b>JCREW Jammer Spiral 2.1 United States &lt;&gt; Army</b>												
	2000	1000	0	0	0	0	0	0	0	0	3000	
HQ Total	2000	1000	0	0	0	0	0	0	0	0	3000	
<b>Symetrics Industries LLC (HQ)</b>												
Symetrics Industries LLC, Melbourne												
<b>ALE-47 P-8 A &lt;&gt; United States &lt;&gt; Navy</b>												
	7	7	10	16	18	18	18	18	12	0	124	
<b>ALE-47 CH-148 &lt;&gt; Canada &lt;&gt; Armed Services</b>												
	6	0	0	0	0	0	0	0	0	0	6	
<b>ALE-47 F-16 C/D &lt;&gt; Air Force</b>												
	16	28	26	20	2	0	0	0	0	0	92	
<b>ALE-47 King Air 350 &lt;&gt; Iraq &lt;&gt; Armed Services</b>												
	3	0	0	0	0	0	0	0	0	0	3	
<b>ALE-47 P-8 A &lt;&gt; Navy</b>												
	2	3	3	0	4	4	0	0	0	0	16	
<b>ALE-47 C-130 J/KC-130 J</b>												
	36	26	28	25	24	23	22	25	28	27	264	
HQ Total	70	64	67	61	48	45	40	43	40	27	505	
<b>Thales (HQ)</b>												
Thales, Neuilly-sur-Seine												
<b>ASTAC Air Force</b>												
	2	2	1	1	0	0	0	0	0	0	6	
<b>DR-3000 Multi-agencies</b>												
	8	8	8	10	12	10	8	10	10	10	94	
Subtotal	10	10	9	11	12	10	8	10	10	10	100	



## Analysis 1

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>Thales Airborne Systems, Elancourt</b>												
<b>Spectra Rafale &lt;&gt; France &lt;&gt; Multi-agencies</b>												
	11	11	12	12	12	13	15	14	16	16	132	
Subtotal	11	11	12	12	12	13	15	14	16	16	132	
<b>Thales Optronics (Vinten) Ltd, Bury St Edmunds</b>												
<b>Vicon 78 455 Lynx AW159 Lynx Wildcat &lt;&gt; United Kingdom &lt;&gt; Army</b>												
	9	9	3	3	0	0	0	0	0	0	24	
<b>Vicon 78 455 Lynx AW159 Lynx Wildcat &lt;&gt; United Kingdom &lt;&gt; Navy</b>												
	6	6	3	3	3	0	0	0	0	0	21	
Subtotal	15	15	6	6	3	0	0	0	0	0	45	
HQ Total	36	36	27	29	27	23	23	24	26	26	277	
<b>Thomas B Thriges Foundation (HQ)</b>												
<b>Terma A/S, Lystrup</b>												
<b>ALQ-213 F-16 &lt;&gt; Pakistan &lt;&gt; Air Force</b>												
	12	12	4	0	0	0	0	0	0	0	28	
<b>ALQ-213 P-8 A &lt;&gt; United States &lt;&gt; Navy</b>												
	8	12	16	16	16	16	16	0	0	0	100	
<b>ALQ-213 P-8 A &lt;&gt; Australia &lt;&gt; Navy</b>												
	0	0	0	2	6	6	0	0	0	0	14	
<b>ALQ-213 P-8 A &lt;&gt; India &lt;&gt; Navy</b>												
	0	2	4	2	0	0	0	0	0	0	8	
<b>ALQ-213 Multi-agencies</b>												
	4	4	6	6	4	4	2	2	2	2	36	
HQ Total	24	30	30	26	26	26	18	2	2	2	186	
<b>Manufacturer Varies</b>												
<b>TADIRCM F/A-18 E/F &lt;&gt; United States &lt;&gt; Navy</b>												
	10	18	24	24	24	24	24	24	24	24	220	
HQ Total	10	18	24	24	24	24	24	24	24	24	220	
<b>Grand Total</b>	<b>8869</b>	<b>7545</b>	<b>6465</b>	<b>7227</b>	<b>7312</b>	<b>5963</b>	<b>4875</b>	<b>5762</b>	<b>4757</b>	<b>5698</b>	<b>64473</b>	

(TABLE 1 - end)

## Analysis 1

**Table 2**  
**The Market for Electronic Warfare Systems**  
**Value Statistics by Headquarters/Company/Program**  
**2012 - 2021**

EST. CALENDAR YEAR VALUE OF PRODUCTION (in millions FY12 \$)												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>Alliant Techsystems Inc (ATK) (HQ)</b>												
<b>Alliant Techsystems - Missile Products, Clearwater</b>												
<b>AAR-47 C-17 &lt;&gt; United States &lt;&gt; Air Force</b>												
	1.02	1.02	.68	.34	.34	.34	.34	.34	.34	.34	\$5.10	
<b>AAR-47 C-130 J -30 &lt;&gt; Iraq &lt;&gt; Air Force</b>												
	.26	.09	.00	.00	.00	.00	.00	.00	.00	.00	\$3.34	
<b>AAR-47 C-130 J -30 &lt;&gt; Israel &lt;&gt; Air Force</b>												
	.26	.26	.00	.00	.00	.00	.00	.00	.00	.00	\$5.10	
<b>AAR-47 KC-130 J &lt;&gt; Kuwait &lt;&gt; Air Force</b>												
	.17	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$1.17	
<b>AAR-47 CV-22/MV-22 &lt;&gt; United States &lt;&gt; Department of Defense</b>												
	3.23	3.15	2.98	2.98	2.98	3.06	2.98	2.47	2.13	2.13	\$28.05	
HQ Total	4.93	4.51	3.66	3.32	3.32	3.40	3.32	2.81	2.47	2.47	\$34.17	
<b>BAE Systems plc (HQ)</b>												
<b>BAE Systems Inc, Electronic Solutions, Nashua</b>												
<b>AAR-57 CMWS United States &lt;&gt; Army</b>												
	120.00	72.00	38.40	38.40	38.40	38.40	38.40	38.40	38.40	38.40	\$499.20	
<b>ALE-55 United States &lt;&gt; Navy</b>												
	27.50	22.00	27.50	22.00	33.00	27.50	27.50	27.50	27.50	27.50	\$269.50	
<b>ALQ-212 AH-64/H-60/S-70 UH-60/CH-47 &lt;&gt; United States &lt;&gt; Army</b>												
	180.00	150.00	130.00	130.00	130.00	100.00	100.00	100.00	100.00	100.00	\$1,220.00	
<b>ALR-56 C F-15 K &lt;&gt; Korea, South &lt;&gt; Air Force</b>												
	3.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$3.00	
<b>ALR-56 M C-130 J &lt;&gt; United States &lt;&gt; Air Force</b>												
	23.00	19.00	10.00	12.00	12.00	14.00	11.00	10.00	11.00	10.00	\$132.00	
<b>ALR-56 M C-130 J &lt;&gt; India &lt;&gt; Air Force</b>												
	5.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$5.00	
<b>ALR-56 M F-16 C/D &lt;&gt; Morocco &lt;&gt; Air Force</b>												
	2.72	4.08	.00	.00	.00	.00	.00	.00	.00	.00	\$6.80	
<b>ALR-94 F-22A &lt;&gt; United States &lt;&gt; Air Force</b>												
	7.50	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$7.50	
Subtotal	368.72	267.08	205.90	202.40	213.40	179.90	176.90	175.90	176.90	175.90	\$2,143.00	
<b>BAE Systems Inc, Electronic Solutions, Austin</b>												
<b>ALE-47 F/A-18 E/F &lt;&gt; United States &lt;&gt; Navy</b>												
	2.09	1.24	2.28	.00	.00	.00	.00	.00	.00	.00	\$5.61	
<b>ALE-47 EA-18G &lt;&gt; United States &lt;&gt; Navy</b>												
	2.09	1.24	2.28	.00	.00	.00	.00	.00	.00	.00	\$5.61	

## Analysis 1

EST. CALENDAR YEAR VALUE OF PRODUCTION (in millions FY12 \$)												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>ALE-47 CV-22/MV-22 &lt;&gt; United States &lt;&gt; Armed Services</b>												
	3.71	3.80	3.52	2.76	2.38	2.19	2.19	2.19	2.19	2.00	\$26.89	
<b>ALE-47 MH-60 R &lt;&gt; United States &lt;&gt; Navy</b>												
	3.14	2.66	2.85	2.85	2.66	1.90	.00	.00	.00	.00	\$16.06	
Subtotal	11.02	8.93	10.93	5.61	5.04	4.09	2.19	2.19	2.19	2.00	\$54.15	
<b>BAE Systems Inc, Land &amp; Armaments, Arlington</b>												
<b>SRBOC MK 36 KDX &lt;&gt; Korea, South &lt;&gt; Navy</b>												
	.90	.00	.00	.90	.90	.90	.00	.00	.00	.00	\$3.60	
<b>SRBOC MK 36 LPD-17 &lt;&gt; United States &lt;&gt; Navy</b>												
	3.60	3.60	.00	3.60	.00	.00	.00	.00	.00	.00	\$10.80	
<b>SRBOC MK 36 DDG-51 &lt;&gt; United States &lt;&gt; Navy</b>												
	.00	3.60	7.20	3.60	7.20	3.60	3.60	3.60	3.60	3.60	\$39.60	
<b>SRBOC MK 36 F-100 &lt;&gt; Australia &lt;&gt; Navy</b>												
	.00	.00	3.60	.00	3.60	3.60	.00	.00	.00	.00	\$10.80	
Subtotal	4.50	7.20	10.80	8.10	11.70	8.10	3.60	3.60	3.60	3.60	\$64.80	
<b>BAE Systems plc, London</b>												
<b>Sky Guardian Armed Services</b>												
	.68	.68	.68	.68	.68	.68	.85	.85	.68	.68	\$7.14	
<b>Sky Guardian 2000 AH-64 D WAH-64 &lt;&gt; United Kingdom &lt;&gt; Armed Services</b>												
	2.80	2.00	2.00	1.60	1.60	1.60	1.60	1.60	1.60	1.60	\$18.00	
Subtotal	3.48	2.68	2.68	2.28	2.28	2.28	2.45	2.45	2.28	2.28	\$25.14	
HQ Total	387.72	285.89	230.31	218.39	232.42	194.37	185.14	184.14	184.97	183.78	\$2,287.09	
<b>Chemring Countermeasures (HQ)</b>												
<b>Chemring Countermeasures, Salisbury</b>												
<b>Sea Gnat United Kingdom &lt;&gt; Navy</b>												
	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	\$2.50	
<b>Sea Gnat Australia &lt;&gt; Navy</b>												
	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19	\$1.88	
<b>Sea Gnat Navy</b>												
	.28	.25	.23	.20	.20	.20	.20	.23	.25	.25	\$2.28	
HQ Total	.71	.69	.66	.64	.64	.64	.64	.66	.69	.69	\$6.65	
<b>Cobham plc (HQ)</b>												
<b>Cobham Sensor and Antenna Systems, Lansdale</b>												
<b>ALQ-99 EA-6 B/EA-18G &lt;&gt; United States &lt;&gt; Navy</b>												
	23.00	12.27	20.70	20.70	20.70	.00	.00	.00	.00	.00	\$97.37	
HQ Total	23.00	12.27	20.70	20.70	20.70	.00	.00	.00	.00	.00	\$97.37	

## Analysis 1

EST. CALENDAR YEAR VALUE OF PRODUCTION (in millions FY12 \$)												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>Elbit Systems Ltd (HQ)</b>												
<b>Elisra Group, Bene Baraq</b>												
<b>SPS Series Air Force</b>												
	9.00	7.50	6.00	7.50	6.00	6.00	6.00	6.00	6.00	6.00	\$66.00	
HQ Total	9.00	7.50	6.00	7.50	6.00	6.00	6.00	6.00	6.00	6.00	\$66.00	
<b>Electromashina (HQ)</b>												
<b>Electromashina, Chelyabinsk</b>												
<b>SHTORA-1 T-84 &lt;&gt; Ukraine &lt;&gt; Army</b>												
	19.00	23.00	23.00	23.00	24.50	25.50	25.50	25.50	17.50	17.50	\$224.00	
<b>SHTORA-1 T-90 &lt;&gt; Russian Federation &lt;&gt; Army</b>												
	52.50	33.50	9.50	12.50	15.50	13.50	12.50	12.50	15.50	15.50	\$193.00	
HQ Total	71.50	56.50	32.50	35.50	40.00	39.00	38.00	38.00	33.00	33.00	\$417.00	
<b>Elettronica SpA (HQ)</b>												
<b>Elettronica SpA, Rome</b>												
<b>ELT/572 Italy &lt;&gt; Air Force</b>												
	12.00	10.00	8.00	8.00	6.00	8.00	8.00	10.00	8.00	6.00	\$84.00	
HQ Total	12.00	10.00	8.00	8.00	6.00	8.00	8.00	10.00	8.00	6.00	\$84.00	
<b>Esterline Technologies Corp (HQ)</b>												
<b>Wallop Defence Systems, Middle Wallop</b>												
<b>Superbarricade Navy</b>												
	5.36	4.60	5.36	4.60	4.60	4.60	4.60	4.60	4.60	4.60	\$47.49	
<b>Ultrabarricade Navy</b>												
	6.13	5.36	6.13	5.36	5.36	5.36	5.36	5.36	5.36	5.36	\$55.15	
HQ Total	11.49	9.96	11.49	9.96	9.96	9.96	9.96	9.96	9.96	9.96	\$102.64	
<b>European Aeronautic Defence and Space Co (EADS) NV (HQ)</b>												
<b>EADS France SAS, Paris</b>												
<b>Dagaie/Sagaie France &lt;&gt; Navy</b>												
	5.00	10.00	5.00	10.00	5.00	5.00	5.00	7.50	5.00	5.00	\$62.50	
<b>Dagaie/Sagaie Navy</b>												
	15.00	10.00	15.00	10.00	15.00	10.00	10.00	12.50	10.00	10.00	\$117.50	
HQ Total	20.00	20.00	20.00	20.00	20.00	15.00	15.00	20.00	15.00	15.00	\$180.00	
<b>Finmeccanica SpA (HQ)</b>												
<b>SELEX Galileo, Edinburgh</b>												
<b>EuroDASS Typhoon EFA &lt;&gt; Air Force</b>												
	118.00	116.00	102.00	100.00	82.00	84.00	80.00	72.00	64.00	40.00	\$858.00	
<b>Outfit DLH Navy</b>												
	.50	.75	.50	.75	.75	.75	1.00	1.25	1.00	.75	\$8.00	

## Analysis 1

EST. CALENDAR YEAR VALUE OF PRODUCTION (in millions FY12 \$)												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>Siren Navy</b>												
	2.25	1.50	2.25	1.50	1.50	2.25	1.50	1.50	1.50	1.50	\$17.25	
Subtotal	120.75	118.25	104.75	102.25	84.25	87.00	82.50	74.75	66.50	42.25	\$883.25	
<b>SELEX Galileo Ltd, Basildon</b>												
<b>Halo United Kingdom &lt;-&gt; Army</b>												
	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	\$12.00	
<b>Halo Multi-agencies</b>												
	3.00	3.00	2.40	2.40	3.00	3.60	3.60	3.60	3.60	3.60	\$31.80	
Subtotal	4.20	4.20	3.60	3.60	4.20	4.80	4.80	4.80	4.80	4.80	\$43.80	
HQ Total	124.95	122.45	108.35	105.85	88.45	91.80	87.30	79.55	71.30	47.05	\$927.05	
<b>General Dynamics Corp (HQ)</b>												
<b>General Dynamics C4 Systems, Scottsdale</b>												
<b>MLQ-40 4 United States &lt;-&gt; Army</b>												
	47.56	44.08	44.08	41.76	41.76	41.76	41.76	41.76	41.76	.00	\$386.28	
<b>MLQ-40 Prophet Enhanced United States &lt;-&gt; Army</b>												
	32.50	20.80	18.20	13.00	13.00	18.20	15.60	13.00	13.00	13.00	\$170.30	
HQ Total	80.06	64.88	62.28	54.76	54.76	59.96	57.36	54.76	54.76	13.00	\$556.58	
<b>Goodrich Corp (HQ)</b>												
<b>Goodrich ISR Systems, Danbury</b>												
<b>AVR-2 CV-22 &lt;-&gt; United States &lt;-&gt; Air Force</b>												
	1.74	1.53	1.09	1.31	.44	.00	.00	.00	.00	.00	\$6.10	
<b>AVR-2 MV-22 &lt;-&gt; United States &lt;-&gt; Armed Services</b>												
	6.76	7.19	6.98	5.01	5.01	5.01	5.01	4.14	.00	.00	\$45.13	
<b>AVR-2 AH-64 D &lt;-&gt; Armed Services</b>												
	5.89	6.54	4.36	9.37	6.10	4.36	2.62	2.62	2.40	2.40	\$46.65	
<b>AVR-2 B UH-60 M &lt;-&gt; Armed Services</b>												
	17.88	20.27	17.88	17.00	16.13	16.79	15.70	15.70	15.70	15.70	\$168.73	
HQ Total	32.26	35.53	30.30	32.70	27.69	26.16	23.33	22.45	18.09	18.09	\$266.61	
<b>ITT Exelis Inc (HQ)</b>												
<b>ITT Exelis, Electronic Systems, Clifton</b>												
<b>ALQ-211 SIRFC United States &lt;-&gt; Special Ops</b>												
	19.50	22.50	22.50	22.50	22.50	22.50	22.50	22.50	19.50	15.00	\$211.50	
<b>ALQ-211 SIRFC NH 90 &lt;-&gt; Armed Services</b>												
	21.00	24.00	27.00	30.00	36.00	36.00	30.00	30.00	30.00	30.00	\$294.00	
<b>ALQ-214 F/A-18 E/F &lt;-&gt; United States &lt;-&gt; Navy</b>												
	35.70	37.40	34.00	34.00	27.20	20.40	23.80	20.40	17.00	17.00	\$266.90	
<b>ALQ-227 EA-18G &lt;-&gt; United States &lt;-&gt; Navy</b>												
	8.25	4.88	9.00	.00	.00	.00	.00	.00	.00	.00	\$22.13	

## Analysis 1

EST. CALENDAR YEAR VALUE OF PRODUCTION (in millions FY12 \$)												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>JCREW Jammer Spiral 3.3 United States &lt;&gt; Army</b>												
	207.00	207.00	207.00	276.00	276.00	207.00	138.00	207.00	138.00	207.00	\$2,070.00	
HQ Total	291.45	295.78	299.50	362.50	361.70	285.90	214.30	279.90	204.50	269.00	\$2,864.53	
<b>Irvin Industries Inc (HQ)</b>												
<b>Irvin-GQ, Llangeinor</b>												
<b>DLF 3 United Kingdom &lt;&gt; Navy</b>												
	3.50	3.50	3.85	4.20	3.85	3.50	3.50	3.50	3.50	3.50	\$36.40	
<b>DLF 3 Navy</b>												
	1.05	1.40	1.75	1.40	1.05	1.05	1.40	1.75	1.40	1.05	\$13.30	
HQ Total	4.55	4.90	5.60	5.60	4.90	4.55	4.90	5.25	4.90	4.55	\$49.70	
<b>Israel Aerospace Industries Ltd (IAI) (HQ)</b>												
<b>Elta Systems Ltd, Ashdod</b>												
<b>EL/L-8222 Israel &lt;&gt; Air Force</b>												
	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	\$120.00	
<b>EL/L-8222 Air Force</b>												
	21.60	19.20	16.80	14.40	12.00	14.40	12.00	14.40	16.80	16.80	\$158.40	
<b>EL/L-8300 Multi-agencies</b>												
	9.00	6.00	6.00	6.00	6.00	6.00	9.00	9.00	6.00	6.00	\$69.00	
<b>EL/M-2160 (V1)</b>												
	4.60	5.37	4.60	3.83	2.30	.00	.00	.00	.00	.00	\$20.70	
Subtotal	47.20	42.57	39.40	36.23	32.30	32.40	33.00	35.40	34.80	34.80	\$368.10	
<b>IAI Elta Systems Group - Elta Technologies Division, Ashdod</b>												
<b>EL/W-2085 GV/500/550 Series G550</b>												
	.00	.00	.00	175.00	.00	.00	.00	.00	.00	.00	\$175.00	
<b>EL/W-2090 IL-76 &lt;&gt; India &lt;&gt; Air Force</b>												
	.00	.00	200.00	.00	.00	.00	.00	.00	.00	.00	\$200.00	
Subtotal	.00	.00	200.00	175.00	.00	.00	.00	.00	.00	.00	\$375.00	
HQ Total	47.20	42.57	239.40	211.23	32.30	32.40	33.00	35.40	34.80	34.80	\$743.10	
<b>Lockheed Martin Corp (HQ)</b>												
<b>Lockheed Martin Maritime Systems &amp; Sensors, Manassas</b>												
<b>BLQ-10 SSN-774 &lt;&gt; United States &lt;&gt; Navy</b>												
	5.50	5.50	5.50	5.50	5.50	5.50	11.00	11.00	.00	.00	\$55.00	
<b>BLQ-10 SSN-688 &lt;&gt; United States &lt;&gt; Navy</b>												
	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	\$110.00	
Subtotal	16.50	16.50	16.50	16.50	16.50	16.50	22.00	22.00	11.00	11.00	\$165.00	
<b>Lockheed Martin Mission Systems &amp; Sensors, Owego</b>												
<b>ALQ-210 MH-60 R &lt;&gt; United States &lt;&gt; Navy</b>												
	74.80	70.40	63.80	61.60	57.20	35.20	.00	.00	.00	.00	\$363.00	
<b>ALQ-210 CH-148 &lt;&gt; Canada &lt;&gt; Navy</b>												
	22.00	17.60	.00	.00	.00	.00	.00	.00	.00	.00	\$39.60	

## Analysis 1

EST. CALENDAR YEAR VALUE OF PRODUCTION (in millions FY12 \$)											
	High Confidence				Good Confidence			Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
<b>ALQ-217 United States &lt;=&gt; Navy</b>											
	5.60	5.60	5.60	5.60	.00	.00	.00	.00	.00	.00	\$22.40
<b>APR-48 A AH-64 D &lt;=&gt; United States &lt;=&gt; Army</b>											
	5.16	.00	3.87	11.61	7.74	.86	.00	.00	.00	.00	\$29.24
<b>APR-48 A AH-64 D &lt;=&gt; Taiwan &lt;=&gt; Army</b>											
	3.44	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$3.44
<b>APR-48 A AH-64 D &lt;=&gt; Saudi Arabia &lt;=&gt; Armed Services</b>											
	1.72	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$1.72
<b>APR-48 A AH-64 D</b>											
	6.88	3.44	4.30	4.30	4.73	3.87	3.87	3.44	3.44	3.44	\$41.71
Subtotal	119.60	97.04	77.57	83.11	69.67	39.93	3.87	3.44	3.44	3.44	\$501.11
<b>Lockheed Martin Sippican, Marion</b>											
<b>Nulka MK 53 Navy</b>											
	27.25	21.80	16.35	21.80	27.25	21.80	27.25	21.80	21.80	21.80	\$228.90
Subtotal	27.25	21.80	16.35	21.80	27.25	21.80	27.25	21.80	21.80	21.80	\$228.90
HQ Total	163.35	135.34	110.42	121.41	113.42	78.23	53.12	47.24	36.24	36.24	\$895.01
<b>MBDA UK (HQ)</b>											
<b>MBDA UK, London</b>											
<b>Saphir Tiger HAD/Tiger HAP &lt;=&gt; Spain &lt;=&gt; Air Force</b>											
	.34	.43	.43	.26	.00	.00	.00	.00	.00	.00	\$1.45
<b>Saphir Tiger HAP/Tiger HAD &lt;=&gt; France &lt;=&gt; Air Force</b>											
	.51	.43	.43	.60	1.02	.77	.00	.00	.00	.00	\$3.74
<b>Saphir Tiger UHT &lt;=&gt; Germany &lt;=&gt; Air Force</b>											
	.85	1.02	1.02	1.02	.85	.00	.00	.00	.00	.00	\$4.76
<b>Saphir NH90 &lt;=&gt; Armed Services</b>											
	.43	.43	.68	1.11	1.19	1.28	2.04	2.04	2.04	1.28	\$12.50
<b>Saphir NH90 NFH/TTH &lt;=&gt; Italy &lt;=&gt; Armed Services</b>											
	.34	.43	.43	.85	1.02	1.02	1.02	1.02	1.02	.85	\$7.99
<b>Saphir NH90 &lt;=&gt; Spain &lt;=&gt; Armed Services</b>											
	.00	.60	.60	.77	.85	.94	1.02	1.02	.85	.85	\$7.48
<b>Saphir NH90 &lt;=&gt; Belgium &lt;=&gt; Armed Services</b>											
	.34	.26	.17	.00	.00	.00	.00	.00	.00	.00	\$7.77
<b>Saphir NH90 &lt;=&gt; Oman &lt;=&gt; Armed Services</b>											
	.51	.68	.00	.00	.00	.00	.00	.00	.00	.00	\$1.19
<b>Saphir NH90 &lt;=&gt; New Zealand &lt;=&gt; Air Force</b>											
	.26	.17	.17	.00	.00	.00	.00	.00	.00	.00	\$6.60
<b>Saphir MRH90 &lt;=&gt; Australia &lt;=&gt; Armed Services</b>											
	.68	.77	1.02	.00	.00	.00	.00	.00	.00	.00	\$2.47
<b>Saphir NH90 &lt;=&gt; Armed Services</b>											
	.26	.43	.51	.68	.85	.51	.00	.00	.00	.00	\$3.23
<b>Saphir A400M &lt;=&gt; Multi-agencies</b>											
	.34	.43	1.02	1.87	2.55	2.55	2.55	2.55	2.13	2.13	\$18.11
HQ Total	4.85	6.04	6.46	7.14	8.33	7.06	6.63	6.63	6.04	5.10	\$64.26

## Analysis 1

EST. CALENDAR YEAR VALUE OF PRODUCTION (in millions FY12 \$)											
	High Confidence				Good Confidence			Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
<b>Northrop Grumman Corp (HQ)</b>											
<b>Northrop Grumman Aerospace Systems, Redondo Beach</b>											
<b>APR-39 A 2 CV-22 &lt;&gt; United States &lt;&gt; Air Force</b>											
	2.52	1.40	1.40	1.40	.28	.00	.00	.00	.00	.00	\$7.00
<b>APR-39 A 2 AH-1 Z &lt;&gt; United States &lt;&gt; Marine Corps</b>											
	5.04	5.32	7.56	7.56	7.56	2.80	1.40	.00	.00	.00	\$37.24
<b>APR-39 A 2 UH-1 Y &lt;&gt; United States &lt;&gt; Marine Corps</b>											
	4.48	3.92	4.48	4.20	2.24	.00	.00	.00	.00	.00	\$19.32
<b>APR-39 A 2 MV-22 &lt;&gt; United States &lt;&gt; Armed Services</b>											
	8.40	8.40	8.40	8.40	9.52	11.48	11.48	11.48	11.48	11.48	\$100.52
<b>APR-39 A 2 S-92/H-92</b>											
	1.68	1.12	1.12	1.40	1.40	1.12	1.40	1.40	1.40	1.40	\$13.44
<b>APR-39 A 4 AH-64 D &lt;&gt; Saudi Arabia &lt;&gt; Armed Services</b>											
	3.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$3.36
Subtotal	25.48	20.16	22.96	22.96	21.00	15.40	14.28	12.88	12.88	12.88	\$180.88
<b>Northrop Grumman Defensive Systems - San Jose Facility, San Jose</b>											
<b>APR-39 A 1 AH-64 &lt;&gt; Multi-agencies</b>											
	2.28	1.90	1.90	.95	1.33	1.33	1.33	1.33	1.33	.00	\$13.68
Subtotal	2.28	1.90	1.90	.95	1.33	1.33	1.33	1.33	1.33	.00	\$13.68
<b>Northrop Grumman Electronic Systems, Rolling Meadows</b>											
<b>AAQ-24 United States &lt;&gt; Armed Services</b>											
	57.00	76.00	57.00	38.00	57.00	38.00	38.00	34.20	30.40	30.40	\$456.00
<b>AAQ-24 Armed Services</b>											
	15.20	11.40	15.20	15.20	15.20	15.20	15.20	15.20	15.20	15.20	\$148.20
<b>ALQ-135 F-15 SG &lt;&gt; Singapore &lt;&gt; Air Force</b>											
	7.10	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$7.10
<b>ALQ-135 F-15</b>											
	21.31	35.52	35.52	35.52	.00	.00	.00	.00	.00	.00	\$127.89
<b>Laircm C-17/C-130/KC-135/C-5 &lt;&gt; United States &lt;&gt; Air Force</b>											
	62.50	125.00	62.50	125.00	62.50	75.00	100.00	75.00	62.50	62.50	\$812.50
Subtotal	163.12	247.92	170.22	213.72	134.70	128.20	153.20	124.40	108.10	108.10	\$1,551.69
<b>Northrop Grumman Electronic Systems, Linthicum</b>											
<b>AAR-54 Multi-agencies</b>											
	3.50	4.00	3.50	3.00	3.00	3.00	2.50	2.50	2.50	2.50	\$30.00
<b>APG-77 F-22A &lt;&gt; United States &lt;&gt; Air Force</b>											
	15.60	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$15.60
Subtotal	19.10	4.00	3.50	3.00	3.00	3.00	2.50	2.50	2.50	2.50	\$45.60
<b>Northrop Grumman Electronic Systems, Baltimore</b>											
<b>APG-81 F-35 &lt;&gt; Multi-agencies</b>											
	140.40	166.40	208.00	317.20	509.60	696.80	962.00	998.40	1118.00	1118.00	\$6,234.80
Subtotal	140.40	166.40	208.00	317.20	509.60	696.80	962.00	998.40	1118.00	1118.00	\$6,234.80



## Analysis 1

EST. CALENDAR YEAR VALUE OF PRODUCTION (in millions FY12 \$)												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>Northrop Grumman Logistics Services Division, Baltimore</b>												
<b>ALQ-218 EA-18G &lt;&gt; United States &lt;&gt; Navy</b>												
	11.68	8.76	3.65	.00	.00	.00	.00	.00	.00	.00	\$24.09	
Subtotal	11.68	8.76	3.65	.00	.00	.00	.00	.00	.00	.00	\$24.09	
<b>Northrop Grumman Sperry Marine, Melville</b>												
<b>WLY-1 SSN-774 &lt;&gt; United States &lt;&gt; Navy</b>												
	2.86	2.86	2.86	2.86	2.86	2.86	5.72	5.72	2.86	2.86	\$34.32	
Subtotal	2.86	2.86	2.86	2.86	2.86	2.86	5.72	5.72	2.86	2.86	\$34.32	
HQ Total	364.92	452.00	413.09	560.69	672.49	847.59	1139.03	1145.23	1245.67	1244.34	\$8,085.06	
<b>Raytheon Co (HQ)</b>												
<b>Raytheon Co, Waltham</b>												
<b>ALR-67 3 F/A-18 E/F &lt;&gt; United States &lt;&gt; Navy</b>												
	28.80	24.00	7.20	20.40	24.00	.00	.00	.00	.00	.00	\$104.40	
<b>ALR-67 3 F/A-18 C/D &lt;&gt; Australia &lt;&gt; Air Force</b>												
	12.00	3.60	.00	.00	.00	.00	.00	.00	.00	.00	\$15.60	
<b>ALR-67 3 F/A-18 C/D &lt;&gt; Finland &lt;&gt; Air Force</b>												
	4.80	16.80	21.60	18.00	.00	.00	.00	.00	.00	.00	\$61.20	
<b>ALR-67 3 F/A-18 C/D &lt;&gt; Switzerland &lt;&gt; Air Force</b>												
	21.60	6.00	.00	.00	.00	.00	.00	.00	.00	.00	\$27.60	
<b>ALR-67 3 CF-18 C/D &lt;&gt; Canada &lt;&gt; Air Force</b>												
	21.60	16.80	.00	.00	.00	.00	.00	.00	.00	.00	\$38.40	
Subtotal	88.80	67.20	28.80	38.40	24.00	.00	.00	.00	.00	.00	\$247.20	
<b>Raytheon Missile Systems, Tucson</b>												
<b>ADM-160B United States</b>												
	29.50	28.75	28.38	28.63	30.38	32.63	31.88	29.88	27.63	27.13	\$294.75	
Subtotal	29.50	28.75	28.38	28.63	30.38	32.63	31.88	29.88	27.63	27.13	\$294.75	
<b>Raytheon Missile Systems, Tucson</b>												
<b>ADM-160B</b>												
	6.25	12.63	15.38	18.13	20.88	19.00	25.75	24.25	25.13	23.38	\$190.75	
Subtotal	6.25	12.63	15.38	18.13	20.88	19.00	25.75	24.25	25.13	23.38	\$190.75	
<b>Raytheon Space &amp; Airborne Systems, El Segundo</b>												
<b>ALE-50 F/A-18 E/F/F-16/B-1 B &lt;&gt; Multi-agencies</b>												
	18.40	17.25	16.10	13.80	11.50	9.20	6.90	5.75	6.90	8.05	\$113.85	
<b>ALR-69 A C-130/F-16/A-10/MH-53 &lt;&gt; United States &lt;&gt; Air Force</b>												
	13.50	15.30	16.20	15.30	14.40	14.40	14.40	16.20	16.20	16.20	\$152.10	
<b>APG-79 F/A-18 E/F &lt;&gt; United States &lt;&gt; Navy</b>												
	82.35	73.20	54.90	61.00	61.00	54.90	45.75	30.50	.00	.00	\$463.60	
<b>APG-79 EA-18G &lt;&gt; United States &lt;&gt; Navy</b>												
	67.10	39.65	73.20	.00	.00	.00	.00	.00	.00	.00	\$179.95	

## Analysis 1

EST. CALENDAR YEAR VALUE OF PRODUCTION (in millions FY12 \$)												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>APG-79 F/A-18 E/F</b>												
	.00	.00	18.30	18.30	.00	.00	.00	.00	.00	.00	\$36.60	
Subtotal	181.35	145.40	178.70	108.40	86.90	78.50	67.05	52.45	23.10	24.25	\$946.10	
HQ Total	305.90	253.98	251.25	193.55	162.15	130.13	124.68	106.58	75.85	74.75	\$1,678.80	
<b>Saab AB (HQ)</b>												
Saab Security and Defence Solutions, Järfälla												
<b>BOL JAS 39 &lt;&gt; Sweden &lt;&gt; Air Force</b>												
	1.08	.84	.96	.96	.96	.60	.60	.60	.60	.60	\$7.80	
<b>BOL Typhoon &lt;&gt; Air Force</b>												
	5.52	5.28	5.28	5.28	5.28	4.80	4.32	4.32	4.32	4.32	\$48.72	
HQ Total	6.60	6.12	6.24	6.24	6.24	5.40	4.92	4.92	4.92	4.92	\$56.52	
<b>Sierra Nevada Corp (HQ)</b>												
Sierra Nevada Corp, Sparks												
<b>JCREW Jammer Spiral 2.1 United States &lt;&gt; Army</b>												
	138.00	69.00	.00	.00	.00	.00	.00	.00	.00	.00	\$207.00	
HQ Total	138.00	69.00	.00	.00	.00	.00	.00	.00	.00	.00	\$207.00	
<b>Symetrics Industries LLC (HQ)</b>												
Symetrics Industries LLC, Melbourne												
<b>ALE-47 CH-148 &lt;&gt; Canada &lt;&gt; Armed Services</b>												
	.57	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$57	
<b>ALE-47 F-16 C/D &lt;&gt; Air Force</b>												
	1.52	2.66	2.47	1.90	.19	.00	.00	.00	.00	.00	\$8.74	
<b>ALE-47 King Air 350 &lt;&gt; Iraq &lt;&gt; Armed Services</b>												
	.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$29	
<b>ALE-47 P-8 A &lt;&gt; United States &lt;&gt; Navy</b>												
	.67	.67	.95	1.52	1.71	1.71	1.71	1.71	1.14	.00	\$11.78	
<b>ALE-47 P-8 A &lt;&gt; Navy</b>												
	.19	.29	.29	.00	.38	.38	.00	.00	.00	.00	\$1.52	
<b>ALE-47 C-130 J/KC-130 J</b>												
	3.42	2.47	2.66	2.38	2.28	2.19	2.09	2.38	2.66	2.57	\$25.08	
HQ Total	6.65	6.08	6.37	5.80	4.56	4.28	3.80	4.09	3.80	2.57	\$47.98	
<b>Thales (HQ)</b>												
Thales, Neuilly-sur-Seine												
<b>ASTAC Air Force</b>												
	3.00	3.00	1.50	1.50	.00	.00	.00	.00	.00	.00	\$9.00	
<b>DR-3000 Multi-agencies</b>												
	16.00	16.00	16.00	20.00	24.00	20.00	16.00	20.00	20.00	20.00	\$188.00	
Subtotal	19.00	19.00	17.50	21.50	24.00	20.00	16.00	20.00	20.00	20.00	\$197.00	

Analysis 1

EST. CALENDAR YEAR VALUE OF PRODUCTION (in millions FY12 \$)												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>Thales Airborne Systems, Elancourt</b>												
<b>Spectra Rafale &lt;&gt; France &lt;&gt; Multi-agencies</b>												
	27.50	27.50	30.00	30.00	30.00	32.50	37.50	35.00	40.00	40.00	\$330.00	
Subtotal	27.50	27.50	30.00	30.00	30.00	32.50	37.50	35.00	40.00	40.00	\$330.00	
<b>Thales Optronics (Vinten) Ltd, Bury St Edmunds</b>												
<b>Vicon 78 455 Lynx AW159 Lynx Wildcat &lt;&gt; United Kingdom &lt;&gt; Army</b>												
	1.08	1.08	.36	.36	.00	.00	.00	.00	.00	.00	\$2.88	
<b>Vicon 78 455 Lynx AW159 Lynx Wildcat &lt;&gt; United Kingdom &lt;&gt; Navy</b>												
	.72	.72	.36	.36	.36	.00	.00	.00	.00	.00	\$2.52	
Subtotal	1.80	1.80	.72	.72	.36	.00	.00	.00	.00	.00	\$5.40	
HQ Total	48.30	48.30	48.22	52.22	54.36	52.50	53.50	55.00	60.00	60.00	\$532.40	
<b>Thomas B Thriges Foundation (HQ)</b>												
<b>Terma A/S, Lystrup</b>												
<b>ALQ-213 P-8 A &lt;&gt; United States &lt;&gt; Navy</b>												
	.31	.47	.62	.62	.62	.62	.62	.00	.00	.00	\$3.90	
<b>ALQ-213 P-8 A &lt;&gt; India &lt;&gt; Navy</b>												
	.00	.08	.16	.08	.00	.00	.00	.00	.00	.00	\$3.1	
<b>ALQ-213 F-16 &lt;&gt; Pakistan &lt;&gt; Air Force</b>												
	.47	.47	.16	.00	.00	.00	.00	.00	.00	.00	\$1.09	
<b>ALQ-213 P-8 A &lt;&gt; Australia &lt;&gt; Navy</b>												
	.00	.00	.00	.08	.23	.23	.00	.00	.00	.00	\$5.5	
<b>ALQ-213 Multi-agencies</b>												
	.10	.10	.15	.15	.10	.10	.05	.05	.05	.05	\$9.0	
HQ Total	.88	1.11	1.09	.93	.96	.96	.67	.05	.05	.05	\$6.75	
<b>Manufacturer Varies</b>												
<b>TADIRCM F/A-18 E/F &lt;&gt; United States &lt;&gt; Navy</b>												
	34.00	61.20	81.60	81.60	81.60	81.60	81.60	81.60	81.60	81.60	\$748.00	
HQ Total	34.00	61.20	81.60	81.60	81.60	81.60	81.60	81.60	81.60	81.60	\$748.00	
<b>Production Total</b>	2194.27	2012.58	2003.48	2126.22	2012.93	1984.86	2154.18	2200.20	2162.59	2152.94	\$21,004.27	

## Analysis 1

EST. CALENDAR YEAR RDT&E FUNDING (in millions FY12 \$)												
	High Confidence				Good Confidence				Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	
<b>BAE Systems plc (HQ)</b>												
<b>BAE Systems Inc, Electronic Solutions, Nashua</b>												
<b>Compass Call Development United States &lt;&gt; Air Force</b>												
	18.70	12.50	12.70	12.50	12.70	13.10	13.40	13.50	14.90	14.90	\$138.90	
HQ Total	18.70	12.50	12.70	12.50	12.70	13.10	13.40	13.50	14.90	14.90	\$138.90	
<b>Raytheon Co (HQ)</b>												
<b>Raytheon Integrated Defense Systems, San Diego</b>												
<b>Ship Self Defense System (SSDS) United States &lt;&gt; Navy</b>												
	72.00	74.00	68.00	50.00	40.00	30.00	20.00	20.00	20.00	20.00	\$414.00	
HQ Total	72.00	74.00	68.00	50.00	40.00	30.00	20.00	20.00	20.00	20.00	\$414.00	
<b>Manufacturer Not Selected</b>												
<b>Joint Counter RCIED Electronic Warfare (JCREW) Program United States &lt;&gt; Navy</b>												
	63.20	71.60	55.10	56.30	57.20	55.00	55.40	53.00	53.40	52.00	\$572.20	
HQ Total	63.20	71.60	55.10	56.30	57.20	55.00	55.40	53.00	53.40	52.00	\$572.20	
<b>Manufacturer Varies</b>												
<b>EW Development United States &lt;&gt; Army</b>												
	97.00	105.00	125.00	200.00	185.00	140.00	100.00	90.00	100.00	100.00	\$1,242.00	
<b>Non-Comm ECM Technology United States &lt;&gt; Army</b>												
	9.00	9.00	11.00	14.00	11.00	10.00	9.00	8.00	9.00	9.00	\$99.00	
<b>Chemical, Smoke and Equipment Defeating Technology United States &lt;&gt; Army</b>												
	4.40	3.00	1.10	1.10	1.00	1.00	1.00	1.00	1.00	1.00	\$15.60	
<b>EW Simulator Development (Navy) United States &lt;&gt; Navy</b>												
	26.00	20.00	20.00	20.00	22.00	20.00	19.00	17.00	17.00	18.00	\$199.00	
<b>EMP EFFECTS &amp; SPECTRUM United States &lt;&gt; Navy</b>												
	4.20	4.60	4.70	4.80	5.00	5.10	5.20	5.40	5.50	5.70	\$50.20	
<b>EW Development United States &lt;&gt; Navy</b>												
	75.00	40.00	30.00	40.00	50.00	40.00	30.00	30.00	30.00	30.00	\$395.00	
<b>RANGE IMPROVEMENT United States &lt;&gt; Air Force</b>												
	50.00	44.00	46.00	46.00	46.00	44.00	46.00	42.00	40.00	45.00	\$449.00	
<b>EW Development United States &lt;&gt; Air Force</b>												
	25.00	50.00	75.00	90.00	75.00	50.00	25.00	30.00	25.00	25.00	\$470.00	
<b>IR/EO CM Technology (U.S. Air Force) United States &lt;&gt; Air Force</b>												
	10.00	10.00	11.00	11.00	10.00	8.00	8.00	9.00	6.00	4.00	\$87.00	
<b>JOINT SPECTRUM CENTER United States &lt;&gt; Department of Defense</b>												
	29.10	24.00	17.80	17.90	17.80	17.90	18.40	18.70	18.90	19.30	\$199.80	
<b>Shipboard EW Improvement Program (SEWIP) United States &lt;&gt; Navy</b>												
	18.00	20.00	17.00	18.00	18.00	15.00	14.00	12.00	23.00	23.00	\$178.00	
<b>Electromagnetic Systems Applied Research (U.S. Navy) United States &lt;&gt; Navy</b>												
	108.33	104.34	102.06	106.58	109.45	110.00	110.00	100.00	90.00	85.00	\$1,025.76	

Analysis 1

EST. CALENDAR YEAR RDT&E FUNDING (in millions FY12 \$)											
	High Confidence				Good Confidence			Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
<b>Defensive System Fusion Technology United States &lt;-&gt; Air Force</b>											
	6.00	6.00	6.00	6.00	7.00	6.00	5.00	6.00	5.00	5.00	\$58.00
HQ Total	462.03	439.94	466.66	575.38	557.25	467.00	390.60	369.10	370.40	370.00	\$4,468.36
<b>RDT&amp;E Total</b>											
	615.93	598.04	602.46	694.18	667.15	565.10	479.40	455.60	458.70	456.90	\$5,593.46

EST. CALENDAR YEAR PROCUREMENT FUNDING (in millions FY12 \$)											
	High Confidence				Good Confidence			Speculative			
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
<b>BAE Systems plc (HQ)</b>											
<b>BAE Systems Inc, Electronic Solutions, Nashua</b>											
<b>Compass Call Mission Equipment United States &lt;-&gt; Air Force</b>											
	270.60	50.10	165.80	60.60	55.00	50.00	.00	.00	.00	.00	\$652.10
HQ Total	270.60	50.10	165.80	60.60	55.00	50.00	.00	.00	.00	.00	\$652.10
<b>General Dynamics Corp (HQ)</b>											
<b>General Dynamics Information Technology, Fairfax</b>											
<b>SLQ-32 SEWIP Block 1 Procurement United States &lt;-&gt; Navy</b>											
	80.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$80.00
HQ Total	80.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	\$80.00
<b>Manufacturer Not Selected</b>											
<b>SLQ-32 SEWIP Future Block Procurement United States &lt;-&gt; Navy</b>											
	44.50	98.30	221.40	274.30	456.80	333.50	287.40	173.00	110.40	110.40	\$2,110.00
HQ Total	44.50	98.30	221.40	274.30	456.80	333.50	287.40	173.00	110.40	110.40	\$2,110.00
<b>Procurem't Total</b>											
	395.10	148.40	387.20	334.90	511.80	383.50	287.40	173.00	110.40	110.40	\$2,842.10
<b>Grand Total All Values</b>											
	3,205.30	2,759.02	2,993.14	3,155.30	3,191.88	2,933.46	2,920.98	2,828.80	2,731.69	2,720.24	\$29,439.83

(TABLE 2 - end)

Analysis 1

Figure 1

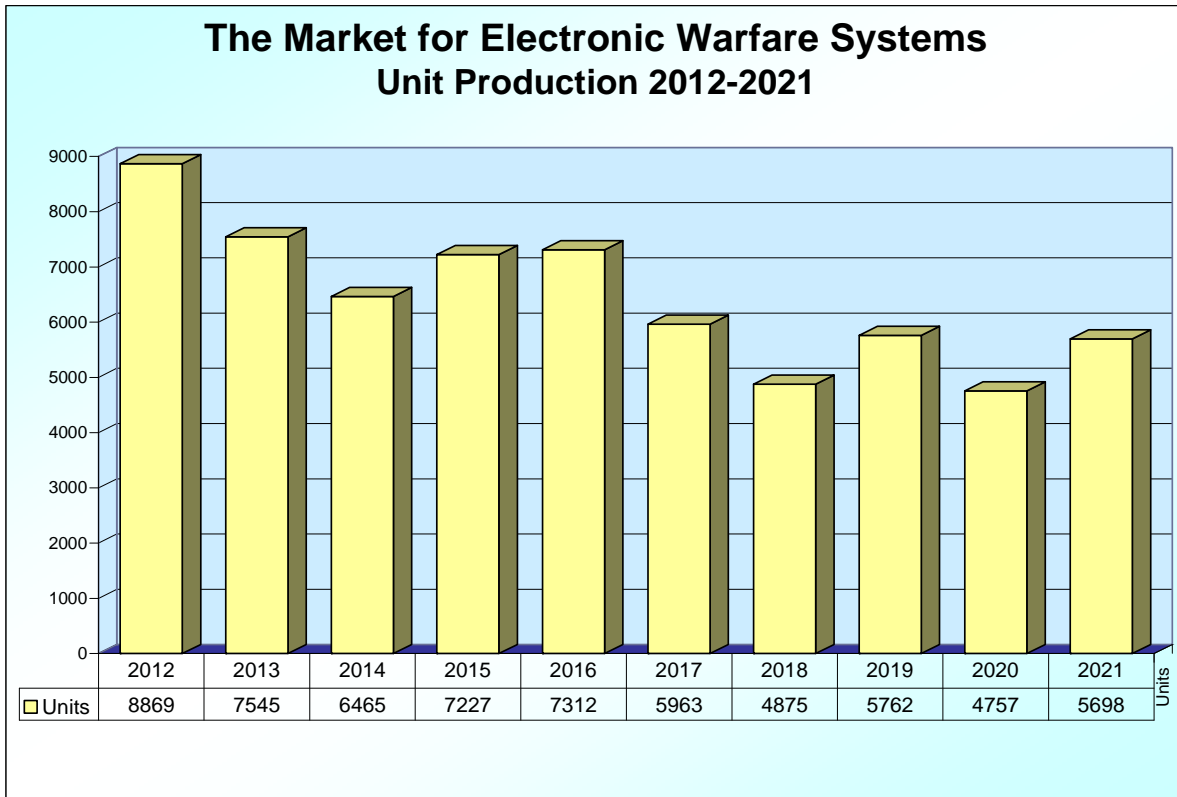
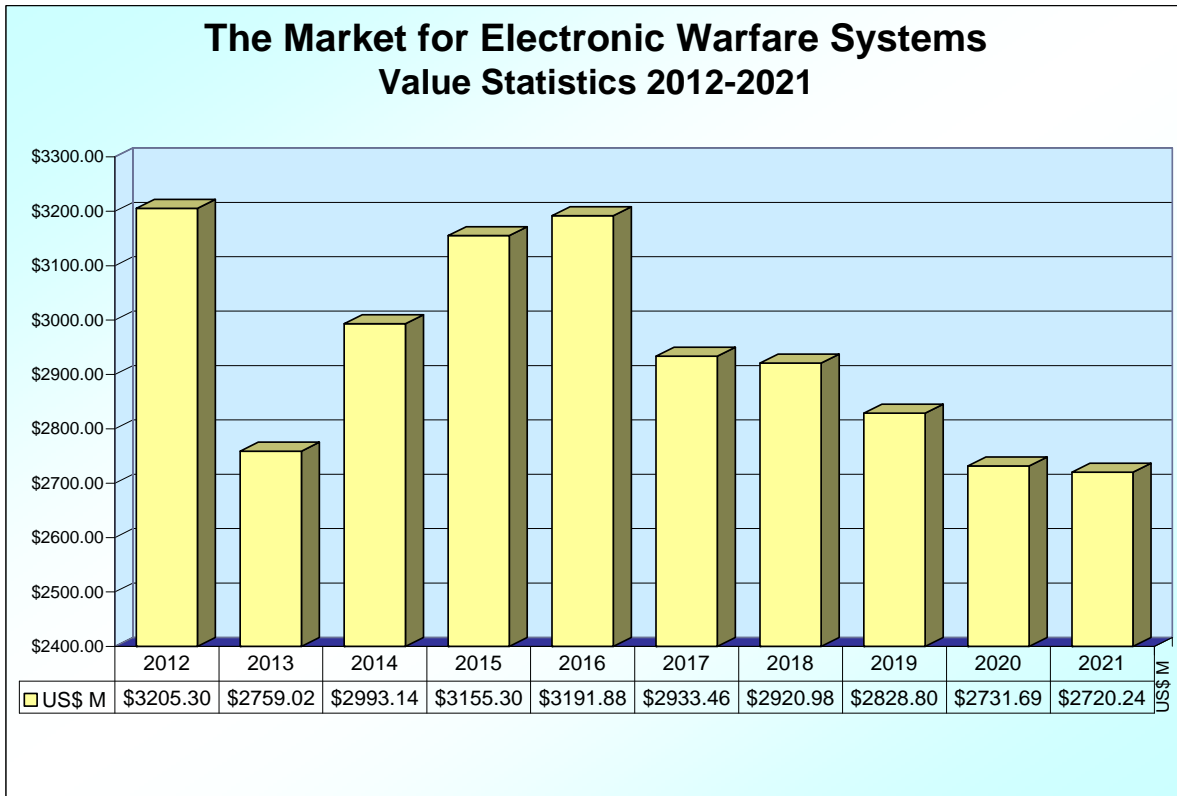


Figure 2



**Table 3**  
**The Market for Electronic Warfare Systems**  
**Unit Production % Market Share by Headquarters/Company**  
**2012 - 2021**

ESTIMATED CALENDAR YEAR UNIT PRODUCTION						
	2012-2016	% Market Share	2017-2021	% Market Share	2012-2021	% Market Share
<b>Alliant Techsystems Inc (ATK) (HQ)</b>						
Alliant Techsystems - Missile Products	232	.62%	170	.63%	402	.62%
Headquarters Total	232	.62%	170	.63%	402	.62%
<b>BAE Systems plc (HQ)</b>						
BAE Systems Inc, Electronic Solutions	3,409	9.11%	3,176	11.74%	6,585	10.21%
BAE Systems Inc, Electronic Solutions	437	1.17%	133	.49%	570	.88%
BAE Systems Inc, Land & Armaments	47	.13%	25	.09%	72	.11%
BAE Systems plc	70	.19%	62	.23%	132	.20%
Headquarters Total	3,963	10.59%	3,396	12.55%	7,359	11.41%
<b>Chemring Countermeasures (HQ)</b>						
Chemring Countermeasures	1,335	3.57%	1,325	4.90%	2,660	4.13%
Headquarters Total	1,335	3.57%	1,325	4.90%	2,660	4.13%
<b>Cobham plc (HQ)</b>						
Cobham Sensor and Antenna Systems	127	.34%	0	.00%	127	.20%
Headquarters Total	127	.34%	0	.00%	127	.20%
<b>Elbit Systems Ltd (HQ)</b>						
Elisra Group	48	.13%	40	.15%	88	.14%
Headquarters Total	48	.13%	40	.15%	88	.14%
<b>Electromashina (HQ)</b>						
Electromashina	472	1.26%	362	1.34%	834	1.29%
Headquarters Total	472	1.26%	362	1.34%	834	1.29%
<b>Elettronica SpA (HQ)</b>						
Elettronica SpA	44	.12%	40	.15%	84	.13%
Headquarters Total	44	.12%	40	.15%	84	.13%
<b>Esterline Technologies Corp (HQ)</b>						
Wallop Defence Systems	138	.37%	130	.48%	268	.42%
Headquarters Total	138	.37%	130	.48%	268	.42%
<b>European Aeronautic Defence and Space Co (EADS) NV (HQ)</b>						
EADS France SAS	40	.11%	32	.12%	72	.11%
Headquarters Total	40	.11%	32	.12%	72	.11%
<b>Finmeccanica SpA (HQ)</b>						
SELEX Galileo	405	1.08%	318	1.18%	723	1.12%
SELEX Galileo Ltd	66	.18%	80	.30%	146	.23%
Headquarters Total	471	1.26%	398	1.47%	869	1.35%
<b>General Dynamics Corp (HQ)</b>						
General Dynamics C4 Systems	264	.71%	200	.74%	464	.72%
Headquarters Total	264	.71%	200	.74%	464	.72%
<b>Goodrich Corp (HQ)</b>						
Goodrich ISR Systems	727	1.94%	496	1.83%	1,223	1.90%
Headquarters Total	727	1.94%	496	1.83%	1,223	1.90%

## Analysis 1

ESTIMATED CALENDAR YEAR UNIT PRODUCTION						
	2012-2016	% Market Share	2017-2021	% Market Share	2012-2021	% Market Share
<b>ITT Exelis Inc (HQ)</b>						
ITT Exelis, Electronic Systems	17,323	46.30%	13,230	48.90%	30,553	47.39%
Headquarters Total	17,323	46.30%	13,230	48.90%	30,553	47.39%
<b>Irvin Industries Inc (HQ)</b>						
Irvin-GQ	146	.39%	138	.51%	284	.44%
Headquarters Total	146	.39%	138	.51%	284	.44%
<b>Israel Aerospace Industries Ltd (IAI) (HQ)</b>						
Elta Systems Ltd	158	.42%	124	.46%	282	.44%
IAI Elta Systems Group - Elta Technologies Division	2	.01%	0	.00%	2	.00%
Headquarters Total	160	.43%	124	.46%	284	.44%
<b>Lockheed Martin Corp (HQ)</b>						
Lockheed Martin Maritime Systems & Sensors	15	.04%	15	.06%	30	.05%
Lockheed Martin Mission Systems & Sensors	308	.82%	60	.22%	368	.57%
Lockheed Martin Sippican	210	.56%	210	.78%	420	.65%
Headquarters Total	533	1.42%	285	1.05%	818	1.27%
<b>MBDA UK (HQ)</b>						
MBDA UK	386	1.03%	370	1.37%	756	1.17%
Headquarters Total	386	1.03%	370	1.37%	756	1.17%
<b>Northrop Grumman Corp (HQ)</b>						
Northrop Grumman Aerospace Systems	402	1.07%	244	.90%	646	1.00%
Northrop Grumman Defensive Systems - San Jose Facility	44	.12%	28	.10%	72	.11%
Northrop Grumman Electronic Systems	401	1.07%	280	1.03%	681	1.06%
Northrop Grumman Electronic Systems	71	.19%	52	.19%	123	.19%
Northrop Grumman Electronic Systems	258	.69%	941	3.48%	1,199	1.86%
Northrop Grumman Logistics Services Division	33	.09%	0	.00%	33	.05%
Northrop Grumman Sperry Marine	5	.01%	7	.03%	12	.02%
Headquarters Total	1,214	3.24%	1,552	5.74%	2,766	4.29%
<b>Raytheon Co (HQ)</b>						
Raytheon Co	206	.55%	0	.00%	206	.32%
Raytheon Missile Systems	1,165	3.11%	1,193	4.41%	2,358	3.66%
Raytheon Missile Systems	586	1.57%	940	3.47%	1,526	2.37%
Raytheon Space & Airborne Systems	3,613	9.66%	1,729	6.39%	5,342	8.29%
Headquarters Total	5,570	14.89%	3,862	14.27%	9,432	14.63%
<b>Saab AB (HQ)</b>						
Saab Security and Defence Solutions	524	1.40%	418	1.55%	942	1.46%
Headquarters Total	524	1.40%	418	1.55%	942	1.46%
<b>Sierra Nevada Corp (HQ)</b>						
Sierra Nevada Corp	3,000	8.02%	0	.00%	3,000	4.65%
Headquarters Total	3,000	8.02%	0	.00%	3,000	4.65%
<b>Symetrics Industries LLC (HQ)</b>						
Symetrics Industries LLC	310	.83%	195	.72%	505	.78%
Headquarters Total	310	.83%	195	.72%	505	.78%
<b>Thales (HQ)</b>						
Thales	52	.14%	48	.18%	100	.16%
Thales Airborne Systems	58	.16%	74	.27%	132	.20%
Thales Optronics (Vinten) Ltd	45	.12%	0	.00%	45	.07%
Headquarters Total	155	.41%	122	.45%	277	.43%



Analysis 1

ESTIMATED CALENDAR YEAR UNIT PRODUCTION						
	2012-2016	% Market Share	2017-2021	% Market Share	2012-2021	% Market Share
<b>Thomas B Thriges Foundation (HQ)</b>						
Terma A/S	136	.36%	50	.18%	186	.29%
Headquarters Total	136	.36%	50	.18%	186	.29%
<b>Manufacturer Varies (HQ)</b>						
Manufacturer Varies	100	.27%	120	.44%	220	.34%
Headquarters Total	100	.27%	120	.44%	220	.34%
<b>Grand Total</b>	<b>37,418</b>	<b>100%</b>	<b>27,055</b>	<b>100%</b>	<b>64,473</b>	<b>100%</b>

(TABLE 3 - end)

## Analysis 1

**Table 4**  
**The Market for Electronic Warfare Systems**  
**Value Statistics % Market Share by Headquarters/Company**  
**2012 - 2021**

EST. CALENDAR YEAR TOTAL VALUE (in millions FY12 \$)						
	2012-2016	% Market Share	2017-2021	% Market Share	2012-2021	% Market Share
<b>Alliant Techsystems Inc (ATK) (HQ)</b>						
Alliant Techsystems - Missile Products	\$19.72	.13%	\$14.45	.10%	\$34.17	.12%
Headquarters Total	\$19.72	.13%	\$14.45	.10%	\$34.17	.12%
<b>BAE Systems plc (HQ)</b>						
BAE Systems Inc, Electronic Solutions	\$1,928.70	12.60%	\$1,005.30	7.11%	\$2,934.00	9.97%
BAE Systems Inc, Electronic Solutions	\$41.52	.27%	\$12.64	.09%	\$54.15	.18%
BAE Systems Inc, Land & Armaments	\$42.30	.28%	\$22.50	.16%	\$64.80	.22%
BAE Systems plc	\$13.40	.09%	\$11.74	.08%	\$25.14	.09%
Headquarters Total	\$2,025.92	13.24%	\$1,052.18	7.44%	\$3,078.09	10.46%
<b>Chemring Countermeasures (HQ)</b>						
Chemring Countermeasures	\$3.34	.02%	\$3.31	.02%	\$6.65	.02%
Headquarters Total	\$3.34	.02%	\$3.31	.02%	\$6.65	.02%
<b>Cobham plc (HQ)</b>						
Cobham Sensor and Antenna Systems	\$97.37	.64%	\$0.00	.00%	\$97.37	.33%
Headquarters Total	\$97.37	.64%	\$0.00	.00%	\$97.37	.33%
<b>Elbit Systems Ltd (HQ)</b>						
Elisra Group	\$36.00	.24%	\$30.00	.21%	\$66.00	.22%
Headquarters Total	\$36.00	.24%	\$30.00	.21%	\$66.00	.22%
<b>Electromashina (HQ)</b>						
Electromashina	\$236.00	1.54%	\$181.00	1.28%	\$417.00	1.42%
Headquarters Total	\$236.00	1.54%	\$181.00	1.28%	\$417.00	1.42%
<b>Elettronica SpA (HQ)</b>						
Elettronica SpA	\$44.00	.29%	\$40.00	.28%	\$84.00	.29%
Headquarters Total	\$44.00	.29%	\$40.00	.28%	\$84.00	.29%
<b>Esterline Technologies Corp (HQ)</b>						
Wallop Defence Systems	\$52.85	.35%	\$49.79	.35%	\$102.64	.35%
Headquarters Total	\$52.85	.35%	\$49.79	.35%	\$102.64	.35%
<b>European Aeronautic Defence and Space Co (EADS) NV (HQ)</b>						
EADS France SAS	\$100.00	.65%	\$80.00	.57%	\$180.00	.61%
Headquarters Total	\$100.00	.65%	\$80.00	.57%	\$180.00	.61%
<b>Finmeccanica SpA (HQ)</b>						
SELEX Galileo	\$530.25	3.46%	\$353.00	2.50%	\$883.25	3.00%
SELEX Galileo Ltd	\$19.80	.13%	\$24.00	.17%	\$43.80	.15%
Headquarters Total	\$550.05	3.59%	\$377.00	2.67%	\$927.05	3.15%
<b>General Dynamics Corp (HQ)</b>						
General Dynamics C4 Systems	\$316.74	2.07%	\$239.84	1.70%	\$556.58	1.89%
General Dynamics Information Technology	\$80.00	.52%	\$0.00	.00%	\$80.00	.27%
Headquarters Total	\$396.74	2.59%	\$239.84	1.70%	\$636.58	2.16%
<b>Goodrich Corp (HQ)</b>						
Goodrich ISR Systems	\$158.49	1.04%	\$108.13	.76%	\$266.61	.91%
Headquarters Total	\$158.49	1.04%	\$108.13	.76%	\$266.61	.91%

## Analysis 1

EST. CALENDAR YEAR TOTAL VALUE (in millions FY12 \$)						
	2012-2016	% Market Share	2017-2021	% Market Share	2012-2021	% Market Share
<b>ITT Exelis Inc (HQ)</b>						
ITT Exelis, Electronic Systems	\$1,610.93	10.53%	\$1,253.60	8.87%	\$2,864.53	9.73%
Headquarters Total	\$1,610.93	10.53%	\$1,253.60	8.87%	\$2,864.53	9.73%
<b>Irvin Industries Inc (HQ)</b>						
Irvin-GQ	\$25.55	.17%	\$24.15	.17%	\$49.70	.17%
Headquarters Total	\$25.55	.17%	\$24.15	.17%	\$49.70	.17%
<b>Israel Aerospace Industries Ltd (IAI) (HQ)</b>						
Elta Systems Ltd	\$197.70	1.29%	\$170.40	1.21%	\$368.10	1.25%
IAI Elta Systems Group - Elta Technologies Division	\$375.00	2.45%	\$ .00	.00%	\$375.00	1.27%
Headquarters Total	\$572.70	3.74%	\$170.40	1.21%	\$743.10	2.52%
<b>Lockheed Martin Corp (HQ)</b>						
Lockheed Martin Maritime Systems & Sensors	\$82.50	.54%	\$82.50	.58%	\$165.00	.56%
Lockheed Martin Mission Systems & Sensors	\$446.99	2.92%	\$54.12	.38%	\$501.11	1.70%
Lockheed Martin Sippican	\$114.45	.75%	\$114.45	.81%	\$228.90	.78%
Headquarters Total	\$643.94	4.21%	\$251.07	1.78%	\$895.01	3.04%
<b>MBDA UK (HQ)</b>						
MBDA UK	\$32.81	.21%	\$31.45	.22%	\$64.26	.22%
Headquarters Total	\$32.81	.21%	\$31.45	.22%	\$64.26	.22%
<b>Northrop Grumman Corp (HQ)</b>						
Northrop Grumman Aerospace Systems	\$112.56	.74%	\$68.32	.48%	\$180.88	.61%
Northrop Grumman Defensive Systems - San Jose Facility	\$8.36	.05%	\$5.32	.04%	\$13.68	.05%
Northrop Grumman Electronic Systems	\$929.69	6.07%	\$622.00	4.40%	\$1,551.69	5.27%
Northrop Grumman Electronic Systems	\$32.60	.21%	\$13.00	.09%	\$45.60	.15%
Northrop Grumman Electronic Systems	\$1,341.60	8.77%	\$4,893.20	34.62%	\$6,234.80	21.18%
Northrop Grumman Logistics Services Division	\$24.09	.16%	\$ .00	.00%	\$24.09	.08%
Northrop Grumman Sperry Marine	\$14.30	.09%	\$20.02	.14%	\$34.32	.12%
Headquarters Total	\$2,463.20	16.09%	\$5,621.86	39.77%	\$8,085.06	27.46%
<b>Raytheon Co (HQ)</b>						
Raytheon Co	\$247.20	1.62%	\$ .00	.00%	\$247.20	.84%
Raytheon Integrated Defense Systems	\$304.00	1.99%	\$110.00	.78%	\$414.00	1.41%
Raytheon Missile Systems	\$145.63	.95%	\$149.13	1.05%	\$294.75	1.00%
Raytheon Missile Systems	\$73.25	.48%	\$117.50	.83%	\$190.75	.65%
Raytheon Space & Airborne Systems	\$700.75	4.58%	\$245.35	1.74%	\$946.10	3.21%
Headquarters Total	\$1,470.83	9.61%	\$621.98	4.40%	\$2,092.80	7.11%
<b>Saab AB (HQ)</b>						
Saab Security and Defence Solutions	\$31.44	.21%	\$25.08	.18%	\$56.52	.19%
Headquarters Total	\$31.44	.21%	\$25.08	.18%	\$56.52	.19%
<b>Sierra Nevada Corp (HQ)</b>						
Sierra Nevada Corp	\$207.00	1.35%	\$ .00	.00%	\$207.00	.70%
Headquarters Total	\$207.00	1.35%	\$ .00	.00%	\$207.00	.70%
<b>Symetrics Industries LLC (HQ)</b>						
Symetrics Industries LLC	\$29.45	.19%	\$18.53	.13%	\$47.98	.16%
Headquarters Total	\$29.45	.19%	\$18.53	.13%	\$47.98	.16%
<b>Thales (HQ)</b>						
Thales	\$101.00	.66%	\$96.00	.68%	\$197.00	.67%
Thales Airborne Systems	\$145.00	.95%	\$185.00	1.31%	\$330.00	1.12%
Thales Optronics (Vinten) Ltd	\$5.40	.04%	\$ .00	.00%	\$5.40	.02%
Headquarters Total	\$251.40	1.64%	\$281.00	1.99%	\$532.40	1.81%

## Analysis 1

EST. CALENDAR YEAR TOTAL VALUE (in millions FY12 \$)						
	2012-2016	% Market Share	2017-2021	% Market Share	2012-2021	% Market Share
<b>Thomas B Thriges Foundation (HQ)</b>						
Terma A/S	\$4.97	.03%	\$1.78	.01%	\$6.75	.02%
Headquarters Total	\$4.97	.03%	\$1.78	.01%	\$6.75	.02%
<b>Manufacturer Not Selected (HQ)</b>						
Manufacturer Not Selected	\$1,398.70	9.14%	\$1,283.50	9.08%	\$2,682.20	9.11%
Headquarters Total	\$1,398.70	9.14%	\$1,283.50	9.08%	\$2,682.20	9.11%
<b>Manufacturer Varies (HQ)</b>						
Manufacturer Varies	\$2,841.26	18.56%	\$2,375.10	16.80%	\$5,216.36	17.72%
Headquarters Total	\$2,841.26	18.56%	\$2,375.10	16.80%	\$5,216.36	17.72%
<b>Grand Total</b>						
	\$15,304.64	100%	\$14,135.19	100%	\$29,439.83	100%

(TABLE 4 - end)

Figure 3

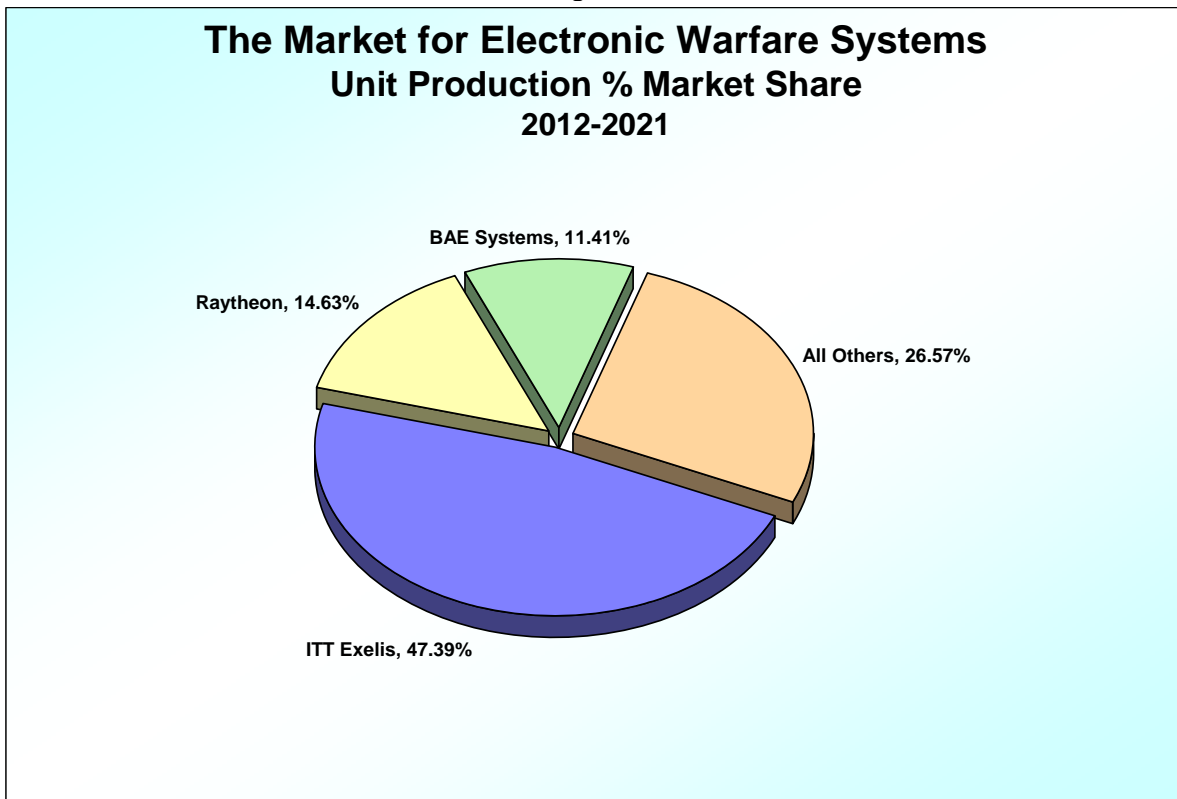
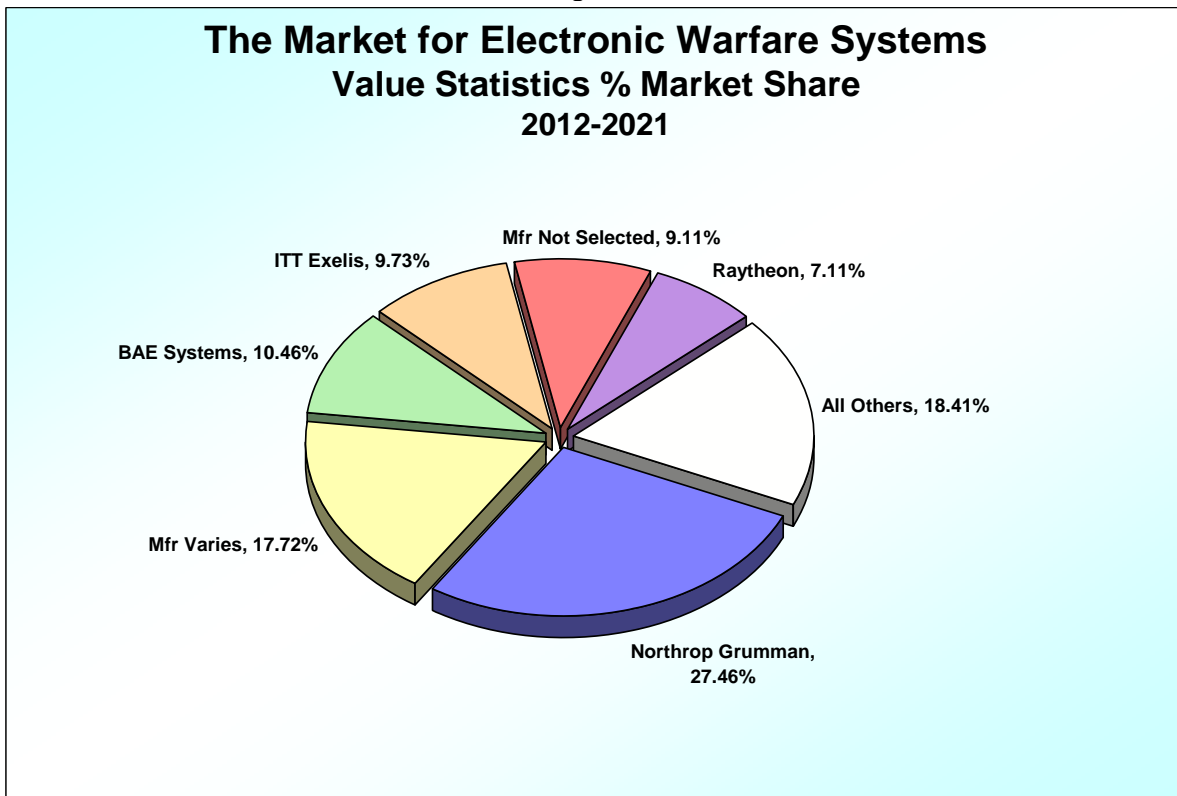


Figure 4



## Analysis 1

## Conclusion

The years 2012 through 2021 will see \$29.4 billion spent on development and production of the major EW systems and R&D programs covered in this analysis. From 2012 through 2016, some 37,418 units will be produced, having a value of \$15.3 billion. From 2017 through 2021, 27,055 units will be introduced to the marketplace, at a value of \$14.1 billion. The first half of the forecast period will see much higher rates of production due to the nature of modern warfare in such places as Afghanistan. Systems like counter-IED jammers and airborne self-protection systems are being fielded to that region as fast as they can be produced.

The cycle of research, development, production, and deployment will remain a constant factor of the EW market well into the next decade. This analysis explores the current state of many of the more important EW programs, with an eye on the direction of the market for future applications. Some systems, already proven in combat, can't be produced fast enough to fill military needs. Other systems, still in the early stages of development, may never see the light of day. Money will be spent in both of these instances, but how much and who will get the lion's share are some of the issues that frame this discussion.

Production will continue to walk hand in hand with development of next-generation systems. While the ALQ-99 will continue to be produced, the U.S. Navy is developing the Next Generation Jammer (NGJ), which

will replace the ALQ-99 on EA-18Gs. Four companies are participating in a four-year, \$430 million competition. The companies – BAE Systems, ITT Corp, Northrop Grumman, and Raytheon – are also among the top five contractors in this analysis.

While competitions like this reveal the nature of technology development, they also remind us of who the dominant players are now and will likely continue to be in the market in the years ahead.

**Related Material.** Other useful market reports and topics related to this analysis may be found in the following Forecast International publications: *Warships Forecast*, *Military Aircraft Forecast*, *Electro-Optical Systems Forecast*, *AN Equipment Forecast*, *C4I Forecast*, and *Airborne Electronics Forecast*.

**Note:** *As this analysis is a sampling of the Electronic Warfare Systems market and its various subsegments (i.e., jammers, radar warning receivers, and missile and laser warning systems), it is not inclusive of every surface or airborne EW system, product, or technology. A number of lead products and systems in each arena are surveyed to ascertain market patterns. Statistics and monetary amounts only represent systems that are currently in production and indicate where these systems are heading. From these indications and trends, an overall picture of the market has been formulated.*

\* \* \*

This Analysis was prepared by:

**FORECAST INTERNATIONAL**

22 Commerce Road, Newtown, CT 06470-1643 USA  
 Telephone: + 1 (203) 426-0800, Fax: + 1 (203) 426-4262  
 Web site: [www.forecastinternational.com](http://www.forecastinternational.com)