Terms

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Numeric

3 PLUS 3 - A National Missile Defense System using satellites and ground-based radars deployed close to the regions from which threats are likely. The space-based system would detect the exhaust plume from the burning rocket motor of an attacking missile. Forward-based radars and infrared-detecting satellites would resolve smaller objects to try to distinguish warheads from clutter and decoys. Based on that data, the ground-based interceptor -- a hit-to-kill weapon -- would fly toward an approximate intercept point, receiving course corrections along the way from the battle management system based on more up-to-date tracking data. As the interceptor neared the target its own sensors would guide it to the impact point. [10:2606] See also BALLISTIC MISSILE DEFENSE (BMD).

3D-iD - A Local Positioning System (LPS) that is capable of determining the 3-D location of items (and persons) within a 3-dimensional indoor, or otherwise bounded, space. The system consists of inexpensive physical devices, called "tags" associated with people or assets to be tracked, and an infrastructure for tracking the location of each tag. [10:2657] NOTE: Related technology applications include EAS, EHAM, GPS, IRID, and RFID.

4GL - See FOURTH GENERATION LANGUAGE

5GL - See FIFTH GENERATION LANGUAGE

A

A-POLE - The distance between a missile-firing platform and its target at the instant the missile becomes autonomous. Contrast with F-POLE. [10:27]

ABLATION - The burning away of parts of a nose cone during atmospheric re-entry. [] See also ASPHALT ABLATION

ABSORPTION - (RF propagation) The irreversible conversion of the energy of an electromagnetic WAVE into another form of energy as a result of its interaction with matter. See also ELECTRO-OPTIC PAINTING and RADAR CAMOUFLAGE. [3]

ABSORPTION HIDING - A LOW-PROBABILITY-OF-INTERCEPT technique in which the radar operates in the ABSORPTION regions of the MILLIMETER WAVE spectrum (*i.e.*, frequencies having large values of atmospheric attenuation by oxygen and water vapor), making it difficult to detect. [4:15]

ABSORPTIVE CHAFF - CONFUSION REFLECTORS which consist of extremely thin conductors, graphite strands, or other material which will absorb electromagnetic energy. See also CHAFF. [8]

ACCESSIBILITY - A measure of the ease with which an enemy can reach an electronic system with a JAMMING countermeasure of appropriate form and sufficient power. See also VULNERABILITY, INTERCEPTIBILITY, and SUSCEPTIBILITY. [4:13]

ACCOMPANYING JAMMING - See ESCORT JAMMING.

ACK EMMA - World War I telephone procedure term for "A.M." Used to avoid the possibility of misunderstanding. [from *Brewer's Dictionary of Phrase and Fable*] See also PIP EMMA.

ACOUSTIC BULLET - A NONLETHAL WEAPON consisting of a high-power, very low frequency acoustic beam weapon that incapacitates by creating plasma in form to the target, generating an impact wave like that of a blunt object. It causes blunt object trauma, as opposed to that of a conventional bullet which cause ripping and tearing of the target. [10:2341] See also SONIC BULLET.

ACOUSTIC DETECTION SENSOR (ADS) - A passive system designed to detect and identify low-flying helicopters and REMOTELY PILOTED VEHICLES (RPV), as well as to detect, identify and localize sniper firings. [10:2719] See also SNIPER ACOUSTIC DETECTION SENSOR (SADS).

ACOUSTIC INTELLIGENCE (ACINT or ACOUSTINT) - Intelligence derived from the collection and processing of acoustic phenomena. [*DoD*] NOTE: Acoustic Intelligence is a component of MEASUREMENT AND SIGNATURE INTELLIGENCE (MASINT).

ACOUSTIC INERTIAL CONFINEMENT FUSION - See SONOFUSION.

ACOUSTIC JAMMING - The deliberate radiation or re-radiation of mechanical or electro-acoustic signals with the objectives of obliterating or obscuring signals which the enemy is attempting to receive and of deterring enemy weapon systems. [1.1]

ACOUSTIC PARITY - Simultaneous first passive detection of each other by a submarine and surface ship. See also ACOUSTIC SIGNATURE. [10:126*]

ACOUSTIC SIGNATURE - The noise emitted by a ship to the water used by passive sensors. This NOISE is further defined as broadband or narrow-band to help define both its source by the ship and its utility to the sensor. See also BROADBAND NOISE, NARROWBAND NOISE. [10:126*]

ACOUSTICS SIGNATURE CONTROL - The employment of materials, electronics, and platform design features intended to reduce the susceptibility of the platform to detection, tracking, and engagement by an adversary using acoustic sensors, such as SONAR. ACOUSTICS SIGNATURE CONTROL includes the use of passive and active devices, materials, features, or techniques on a platform to reduce or limit the generation or transmission of sound or vibrations. These include specially designed materials, coatings, absorbers, decouplers or damping, as well as active noise reduction or cancellation systems, and magnetic bearings. [12] See also INFRARED SIGNATURE CONTROL, LASER SIGNATURE CONTROL, MAGNETIC SIGNATURE CONTROL, MULTISPECTRAL SIGNATURE CONTROL, OPTICAL SIGNATURE CONTROL, RADIO FREQUENCY (RF) SIGNATURE CONTROL, and SIGNATURE CONTROL.

ACOUSTIC WEAPON - A device, which may or may not be a NONLETHAL WEAPON, that emits sonic frequencies causing such sensations as debilitating dizziness and motion sickness or nausea, and can also generate vibrations of body organs resulting in extreme pain, seizures, or death. [10:2730] See also HIGH POWERED ACOUSTIC WEAPON, SILENT SOUND DEVICE, THERMAL GUN. Note: Acoustic weapons may be grouped as shown below: [10:2748]

ACOUSTIC WEAPON CHARACTERISTICS

TYPE	FREQUENCY	TARGET EFFECTS	PROPAGATION CHARACTERISTICS
Infrasound	Less than 20 Hz	Mild to severe discomfort; organ functional disturbance; organ disruption	Ground or structure penetration Long-range propagation Non-directional
Sonic	20 Hz to 20 KHz	Hearing interference; performance degradation; pain; hearing loss; tissue damage	Moderate propagation and moderate directionality
Ultrasonic	20 KHz and above	Possible diffuse psychological effects; pain; surface tissue damage; tissue destruction	Limited propagation; highly directional

ACOUSTO-OPTIC (AO) RECEIVER - A SIGINT receiver which process signals using BRAGG CELLs. In these cells, RF signals are converted into acoustic waves which are then sampled with light beams. AO receivers share the positive features of MICROSCAN RECEIVERs, and have good signal probability of intercept (POI). [10:2561]

ACOUSTO-OPTICS - The interaction between sound and light in a crystal. This interaction modifies the light beam's amplitude, frequency, phase and direction, thus processing and revealing information carried by both the sound and the light. Acousto-optics has application in ESM for analysis of low-probability-of-intercept FREQUENCY HOPPING signals. See also BRAGG CELL. [10:29] NOTE: In a typical application, a laser beam is expanded, spatially filtered, and collimated by a set of lenses which direct the beam to a Bragg cell. Concurrently, a transducer on the cell converts the micro-wave signal into an acoustic wave that modulates the light beam, producing a separate beam for each component frequency of the signal and deflecting the beam in proportion to its frequency. A photodetector array detects each beam's position (its underlying frequency), and produces electric output indicating both the frequency and power of each component in the original microwave signal. This rapid signal processing allows accurate measurement of the signal's pulse timing and duration.

ACTIVE AEROELASTIC WING (AAW) - A flexible wing that can be aerodynamically distorted to control the plane's roll, reducing and ultimately eliminating the need for ailerons and flaps (and associated hardware). [10:3044]

ACTIVE AIR DEFENSE - Direct defensive action taken to nullify or reduce the effectiveness of hostile air action. It includes such measures as the use of aircraft, air defense weapons, weapons not used primarily in an air defense role and ELECTRONIC WARFARE. See also AIR DEFENSE. Contrast with PASSIVE AIR DEFENSE. [1.1]

ACTIVE ARMOR - Armor designed to dynamically thwart damage to a vehicle. It is comprised of explosive cassettes containing embedded sensors to detect an impacting projectile and to decrease it's damaging effect on the vehicle. Active armor includes ELECTROMAGNETIC ARMOR, REACTIVE ARMOR and SMART ARMOR. []

ACTIVE ARRAY RADAR - A phased array radar in which each radiating element contains a transmitter and receiver front end, as opposed to a single transmitter/receiver serving all phased array elements. Advantages attributed to active array radars include efficient use of prime power, no waveguide losses, very wide bandwidth, extreme reliability, and potential for ARTIFICIAL INTELLIGENCE (AI) features, such as simultaneously performing radar surveillance, communications and weapon control, among others. [10:2537]

ACTIVE CANCELLATION - A technique for reducing the RADAR CROSS SECTION of a target, done by emitting radiation that will cancel the reflected radar energy. Contrast with PASSIVE CANCELLATION. See also RADAR CROSS SECTION REDUCTION techniques. [10:37] NOTE: In active cancellation, an aircraft, when painted by a radar, transmits a signal which mimics the echo that the radar will receive - but one half wavelength out of phase, so that the radar sees no return at all. The advantage with this technique is that it uses very low power (compared with conventional EW) and provides no clues to the aircraft's presence. The challenge is that it requires very fast processing and that poorly executed active cancellation could make the target more, rather than less, visible to the radar. [10:2966]

ACTIVE DENIAL SYSTEM (ADS) - A NONLETHAL WEAPON (NLW) that uses pulses of electromagnetic energy to heat the water molecules in a person's skin, causing a painful burning sensation but no actual burning. [10:2883] NOTES: (1) The ACTIVE DENIAL SYSTEM is designed to disperse disruptive crowds as far as 640 meters away without injuring the demonstrators. The radiation can penetrate clothing but will only react with skin to a depth of less than 0.4 mm. These weapons can be either hand-held, vehicle mounted, or mounted on aircraft. (2) In April 2005 a contract was awarded to design, build, test, and quickly field and support a fixed Active Denial System (ADS) referred to as System 2 or ADS2, a millimeter-wave directed-energy unit capable of being transported by truck or C-130

and operated either from the ground or from military vehicle. The energy beam produced by the ADS causes the target to experience an intolerable burning sensation, which immediately stops when the individual moves out of the beam or when the system is deactivated, and the beam causes no physical injury. [10:3053]

ACTIVE ELECTRONIC COUNTERMEASURES - The employment of active ELECTRONIC JAMMING to prevent or degrade the use of the ELECTROMAGNETIC SPECTRUM by the enemy. Contrast with PASSIVE ELECTRONIC COUNTERMEASURES. [10:3]

ACTIVE ELEMENT ARRAY (AEA) - A phased-array system having an independently controlled active transmit and receive function for each radiating element. [10:2677] See also PHASED-ARRAY ANTENNA.

ACTIVE EXPENDABLE DECOY (AED) - An RF DECOY separated some distance from the protected platform and which transmits a signal greater in amplitude than that of the SKIN PAINT of the protected craft in order to capture the threatening missile and decoy it away from its target. [10:65]

ACTIVE HOMING GUIDANCE - See also HOMING GUIDANCE. Contrast with PASSIVE HOMING GUIDANCE, SEMI-ACTIVE HOMING GUIDANCE. {JOINT PUB 1-02} A system of homing guidance wherein both the source for illuminating the target, and the receiver for detecting the energy reflected from the target as the result of illuminating the target, are carried within the missile. [1.1]

ACTIVE INFRARED SENSOR - An INFRARED sensor which transmits and receives radiation. The sensor may be a COHERENT INFRARED SENSOR or an INCOHERENT INFRARED SENSOR. Contrast with PASSIVE INFRARED SENSOR. [4:6]

ACTIVE INTERROGATION - The scanning of an object with a beam of neutrons or gamma rays to generate a measurable emission that allows identification of the material in the object. [10:2963] NOTE: While radioactive material produces radioactive particles, and are thus identifiable with passive instruments, the employment of active emission allows the identification of high explosives and other types of substances that are not normally radioactive.

ACTIVE LOADING - A STEALTH TECHNIQUE in which the protected platform generates a false ECHO whose amplitude and phase can be used to cancel real radar echoes from several directions simultaneously to avoid detection by a network of radars. []

ACTIVE MAGNETIC BEARING (AMB) -- An alternative to conventional bearings, AMB consists of a journal mounted on a rotating shaft surrounded by a stator (electromagnetic coils) that exerts magnetic forces to keep the shaft suspended. [10:2652]

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY (AMLCD) - A type of LIQUID CRYSTAL DISPLAY (LCD) . The elements are controlled by a matrix of thin-film transistors (TFTs). An active semiconductor element -- a transistor or diode -- is located at each pixel location. AMLCDs provide full color, active motion video and readability in sunlight. They are thin compared to CATHODE RAY TUBEs (CRTs), have very low power requirements, good environmental characteristics, no convergence or distortion problems, are light-weight, rugged, and offer color purity and brilliance. AMLCDs are gradually replacing cathode ray tubes (CRTs) in most weapons systems. [10:2518] See also REFRACTIVE LIQUIDS.

ACTIVE MAWS - A MISSILE APPROACH WARNING SYSTEM (MAWS) which generally employs PULSED DOPPLER RADAR as its sensor. This radar is able to discern a moving target in stationary or slow-moving background clutter. Further, it permits determination of range information and more precise ANGLE-OF-ARRIVAL (AOA) data. Since use of a radar precludes stealthy operation, and because missile detection distance is generally limited due to low RADAR CROSS SECTIONs (RCSs), the use of active MAWS has some disadvantages over that of PASSIVE MAWS. [10:2558]

ACTIVE NETWORK GUIDANCE IN EMERGENCY LOGIC (ANGEL) - A Navy system originally intended to be an accident, or mishap, avoidance program, but could result in removing man from the cockpit. [10:2695]

ACTIVE NETWORK INTRUSION DEFENSE (ANID) - The capability to respond in REAL TIME to NETWORK INTRUSIONS by making changes to network devices such as ROUTERS, FIREWALLS, INTRUSION DETECTORS, etc. NOTE: The ANID system will automatically disable routes used by a HACKER. ANID will also employ a distributed ARCHITECTURE with intrusion-detection capabilities installed at very low levels, as well as a collection of smart AGENTS to correlate sensor information and distribute summary-level alert information to neighboring nodes. [10:2881] See also NETWORK-BASED INTRUSION DETECTION.

ACTIVE OPTICS - Optical elements such as mirror surfaces whose shape is actively and continuously deformed by various electromechanical means for the purpose of correcting or controlling the performance of an optical system. The most familiar example is the "rubber mirror" whose surface shape, and thus reflective qualities, can be controlled by electromechanical means. [] NOTE: Only a few microns thick, the

"rubber mirror" is basically a coated sheet of glass can be moved by hundreds of finger-like actuators thousands of times each second to achieve specified distortions with their associated optical properties..

ACTIVE PROTECTION SYSTEM (APS) - A system composed of a FREQUENCY-AGILE, MILLIMETER-WAVE radar able to detect and track incoming antitank guided missiles, and an active countermeasure suite. [10:2585] See also SLID NOTE: APS is essentially a "bullet-on-bullet" technology which involves very high velocity rounds and a very short reaction time, with virtually no room for error. [10:2905]

ACTIVEX (ActiveX) - A computer scripting language, developed by Microsoft Corp., by which small programs, called "controls" can be downloaded from the Internet and executed. [10:2619] See also JAVA. NOTE: Once a user's browser downloads an ActiveX control from a site, the control remains on the user's computer. So when the user visits another site (or another page on the site) using the same control, it need not download the control again.

AD HOC NETWORK - A collection of wireless mobile nodes dynamically forming a temporary network without the use of any existing network infrastructure or centralized administration. []

ADAPTIVE BATTLESPACE AWARENESS (ABA) - The ability to provide a common operating picture to provide relevant information to commander-in-chief (CINC), joint task force (JTF), and component-level SITUATIONAL AWARENESS (SA), decision-making, execution, and planning for future military operations by providing user-customized templates and filters; providing links to relevant amplifying information such as TARGETING, intelligence products, status, etc.; introducing new force-level track types; and facilitating information aggregation at the CINC and JTF levels. [10:2881]

ADAPTIVE CONTROL - A control system that adjusts the response from conditions detected during the operation. [12]

ADAPTIVE FILTER - An electronic FILTER that automatically adjusts to changing signal conditions. [10:58] NOTE: Adaptive filters are used in receivers to reject interfering signals such as those caused by JAMMING or unintentional interference.

ADAPTIVE OPTICS SYSTEMS - Optical systems that compensate for the effects of the atmosphere and other phase distortion sources. []

ADAPTIVE SCHEDULER - An ADAPTIVE CONTROL feature of a sensor that can automatically change DWELL and REVISIT times, depending upon the threat

environment, *e.g.*, more visits to identify targets, and minimal visits to threat sectors containing hostile countermeasures such as anti-radiation missiles. [10:2812]

ADDRESS HYGIENE - The computerized process of analyzing postal address lists and modifying data in order to increase the accuracy of the data. For example, a set of duplicate addresses may exist because the street address on one record is abbreviated, *e.g.*, "Av.", and the other spelled out, *e.g.*, "Avenue"; one task of address hygiene might be to spell out all abbreviations (*e.g.*, "Dr" and "Dr." changed to "Drive", "Av", "Av." and "Ave" changed to "Avenue", "Rd" and "Rd." changed to "Road", etc...). More sophisticated techniques might include Zip Code correction, telephone area code corrections, name standardization, automatic checking of public records to check for irregularities and errors, as well as other cleansing tasks to improve data quality and create a more consistent and reliable database free of duplicate records. []

ADVANCED BATTLESPACE INFORMATION SYSTEM (ABIS) - A federation of systems that forms an underlying grid of flexible, shared and assured information services and provides advanced capabilities in support of new command and control and force employment concepts. It blends rapidly emerging commercial technologies with advanced military research to deliver comprehensive knowledge to war fighters at all levels. ABIS comprises a collection of distributed data and applications integrated through a grid of supporting services. [10:2593] NOTE: Development of ABIS would entail an orderly progression from existing STOVEPIPE systems to overarching technology capabilities in less than 15 years (1997).

ADVANCED CLOSE AIR SUPPORT SYSTEM (ACASS) - A ruggedized handheld computer system used by forward air controllers to direct pilots to targets quickly and accurately. The computer features a GLOBAL POSITIONING SYSTEM (GPS) device, a LASER rangefinder, and a multi-band inter/intra-team radio. Area data are provided by fresh imagery from a National Imagery and Mapping Agency satellite. [10:2933] NOTE: Data communications are relatively secure because data are transmitted in short bursts.

ADVANCED DISCRIMINATING LADAR [Technology] (ADLT) - A Doppler-image LADAR sensor for missile interceptors. It employs a LASER to scan a target in the same manner as a RADAR. When employed, the reflected energy from an incoming warhead is received and Doppler processed to gather detailed range and speed data for use by the interceptor. [10:2926]

ADVANCED ELECTRO-OPTICAL SYSTEM (AEOS) - A 3.67 meter telescope located on the island of Maui. AEOS will have seven *coude* rooms for various experiments, as well as conventional Cassegrain positions located on the mount itself. *Le coude* is French for "elbow" - meaning the light is "bent" from the telescope

through a *coude* path to the basement of the facility. From the basement, the light is redirected to the appropriate laboratory for data collection, analysis, or experiments. [10:2804]

ADVANCED ENCLOSED MAST/SENSORS (AEM/S) -- A large composite structure (approx. 90 feet high by 35 feet in diameter) designed to reduce the RADAR CROSS SECTION (RCS) of structure. The upper half of the hexagonal mast, intended to pass own-ship sensor frequencies, is covered with a FREQUENCY SELECTIVE SURFACE (FSS); the lower half can be reflective or covered with RADAR ABSORBING MATERIAL (RAM). The mast encloses a variety of antennas. The mast serves the dual purpose of protecting its contents from the elements and reducing the overall RCS of the vessel. [10:2658] NOTE: An AEM/S was installed on the *USS Arthur W. Radford (DD-968)* in May of 1999. [10:2672]

ADVANCED EXTREMELY HIGH FREQUENCY (AEHF) - A constellation of GEOSYNCHRONOUS SATELLITES to provide worldwide, secure, survivable, protected communications to all current Military Strategic and Tactical Relay Systems (MILSTAR) and planned Advanced EHF users that is backward compatible, improves ease of operations, facilitates satellite control and monitoring, and effectively interfaces with evolving terminal designs. [http://www.globalsecurity.org/space/systems/milstar3.htm - 2004] NOTE: Advanced EHF is to consist of four cross-linked satellites covering the globe from 65 degrees north to 65 degrees south, providing 10 times the data rate available through MILSTAR.

ADVANCED GUN SYSTEM (AGS) -- A 155 mm gun mount designed with low radar and infrared signatures. The gun will be capable of firing ballistic and precision-guided munitions to ranges up to 100 nautical miles. [10:2659] See also AUTONOMOUS NAVAL SUPPORT ROUND (ANSR), BARRAGE ROUND. NOTES: (1) AGS will satisfy Operational Requirement Document (ORD) requirements for range, accuracy, lethality, and sustained fire, as well as USMC requirements for Naval Surface Fire Support NSFS) and is consistent with Army requirements for precision engagement and dominant maneuver warfare. (2) Attributes: • Increased volume of fires for forces ashore' • Greatly increased range and improved lethality; • Unmanned magazine; • Increased Sustainability. (3) As a part of the AGS program, a new Long Range Land Attack Projectile (LRLAP) is being developed. The LRLAP will use the GLOBAL POSITIONING SYSTEM (GPS) for in-flight guidance. [Source: Navy's DD(X) Web site, http://peoships.crane.navy.mil/ddx/ .]

ADVANCED INTELLIGENT NETWORK (AIN) - A National Communications System (NCS) network which can provide access control, priority treatment, user authentication, and other survivability features supporting National Security and Emergency Preparedness (NS/EP) telecommunications. It is a service-independent architecture introduced into the Public Switched Network (PSN) that will provide technical and cost advantages and end-user control over service definition, service

customization, and choice of equipment suppliers, as well as the ability to modify and manage their services without telecommunications service provider intervention. View the 1999 AIN architecture. [10:2806]

ADVANCED JOINT EFFECTIVENESS MODEL (AJEM) -- A tri-service developed computer simulation model designed to be the DoD standard computer simulation for evaluating the lethality and terminal effectiveness of munitions and the vulnerability of aircraft, missiles, and ground-mobile systems.
[http://ajem.survice.com/globals/ajem_home.html]

ADVANCED LIGHTWEIGHT INFLUENCE SWEEP SYSTEM (ALISS) - A system which uses new magnetic and acoustic technology to defeat "smart" multisensor sea mines designed to discern real targets from spoofs. Its magnetic technology feature uses closed-cycle, conductively cooled, superconducting magnets arranged in a 5-ft diameter circle that emulates the dipole magnetic moment of assault craft. The acoustic technology feature uses plasma-discharge, pulse-power techniques in three "spark-gap" electrodes to discharge electrical pulses that simulate the sound of the Landing Craft, Air Cushioned (LCAC). [10:2691]

ADVANCED MULTI-FUNCTION RADIO FREQUENCY SYSTEM (AMRFS) - A system which consolidates, in a single aperture, the antennas required for shipboard radar, ELECTRONIC WARFARE (EW), IDENTIFICATION, FRIEND OR FOE (IFF) and communications. [10:2678]

ADVANCED RESEARCH PROJECT AGENCY (ARPA) LINCOLN C-BAND OBSERVABLE RADAR (ALCOR) - See ARPA LINCON C-BAND OBSERVABLE RADAR.

ADVANCED SWIMMER DELIVERY SYSTEM (ASDS) - A dry mini-submarine with a two-man crew, capable of clandestine and covert insertion and recovery of a Navy SEa-Air-Land (SEAL) squad or Special Operations Forces (SOF) troops. The ASDS can be launched from a submarine or from the well-deck of an amphibious ship. []

ADVANCED TERMINAL EMULATION - See SCREEN SCRAPING.

ADVANCED TETHERED VEHICLE (ATV) - A tethered, unmanned vehicle system designed for operation at great sea depths. It employs multiple television cameras to provide three-dimensional views of its work area. []

ADVANCED THREAT INFRARED COUNTERMEASURES (ATIRCM) - An aircraft survivability system which performs the functions of missile warning,

INFRARED jamming and expendable dispensing. The system features a coordinated, multispectral response from its directable jammer and dispenser that is CUED by either an electro-optical or infrared missile warning subsystem. The missile warning sensors detect all types of missile threats (not just infrared), thus can provide data to other aircraft survivability equipment (ASE). [10:2547]

ADVANCED UNITARY PENETRATOR (AUP) - A sub-caliber (*i.e.*, smaller diameter) high density penetrator employing ultra-high density tungsten explosives to achieve increased target penetration. The penetrator is carried in a larger-caliber light-weight round which provides the aerodynamic characteristics needed for accuracy. []

ADVERSE WEATHER AERIAL DELIVERY SYSTEM (AWADS) - (1) The precise delivery of personnel, equipment, and supplies during adverse weather, using a self-contained aircraft instrumentation system without artificial ground assistance, or the use of ground navigational aids. [*DoD definition*] (2) A multifunction, dual-band radar system providing precise navigation under conditions of zero visibility and/or darkness. [10:2913] NOTES: (1) The AWADS is installed on cargo transport aircraft and supports the aerial delivery via parachute drop of critical supplies and equipment, including humanitarian aid, to desired locations with pinpoint accuracy. (2) (*ca* 2002) The USAF Adverse Weather Aerial Delivery System (AWADS) C-130 aircraft are equipped with a multi-band radar that provides long-range and short-range precision ground mapping for extremely accurate delivery of equipment and personnel into unprepared sites under all weather conditions.

AERIAL DIVERSIONARY DEVICE - A NONLETHAL WEAPON consisting of a multi-shot capability to distract individuals or crowds. In crowd control, it can be used to provide a warning shot by delivering a flash-bang projectile over the heads of a violent or potentially violent crowd to allow other troop formations to maneuver to more advantageous positions. [10:2857]

AEROSOL - (1) (laser-maser) A suspension of small solid or liquid particles in a gaseous medium. Typically, the particle sizes may range from 100 micrometers to 0.01 micrometers or less. [3] (2) Solid, resonant-size particles dispersed in the atmosphere, and having a high index of refraction. The particles both scatter and absorb visual and laser energy so as to reduce the effectiveness of weapon systems directed by these techniques. [4:1] NOTE: The particle size and type are chosen to scatter or absorb radiation from electro-optical system targets. Some forms of aerosols can partially absorb microwave signals. [8]

AEROSTAT - A tethered airship, generally carrying a sensor. []

AFFORDABLE MOVING SURFACE TARGET ENGAGEMENT (AMSTE) - The ability to employ airborne sensor resources to fix, track and engage with precision, moving surface threats from long ranges and in all weather conditions. [10:2849]

AGENT - (1) In VIRTUAL REALITY, a software program that can carry out fairly sophisticated tasks in unknown networked environments without human intervention; in other words a "smart" BOT. [10:2595] (2) A software component that performs one or more common tasks by acting in a preset manner. Agents may be classified as to characteristics (mobility - stationary or mobile); response method (deliberative or reactive); autonomy; learning; and specific task to be performed (e.g., interface). [10:2624] Also called SOFTWARE AGENT.

AGENT-BASED MODELING AND SIMULATION (ABMS) - A relatively new (*ca* 2007) approach to modeling systems comprised of interacting autonomous agents. An agent is an entity, such as an organism, person or a social organization whose activities (including movements, as well as interactions with the physical and social environment) are programmed as a set of behavioral rules. Agent-based models differ from most computer models in that the computation is decentralized, not centralized. Each individual agent can have variables associated with it instead of having variables representing the aggregate properties of the system. These variables can change as the agents move and interact with their environment. Agents can be identical or they can be of different 'breeds. One can specify behaviors and decision-making rules for each breed of agent and control each breed separately. The aggregate behavior "emerges" from the interaction of the agents and the environment. [] NOTE: For a related term, see ABSS below.

AGENT BASED SOCIAL SIMULATION (ABSS) – A science related to a number of other areas, namely, Agent-based Computing; Agent-based Social Simulation; Computer Simulation; and Social Science. *Agent-based computing* is a research area mainly within computer science and includes, agent-based modeling, design, and programming. The *social sciences* those sciences which address the interaction among social entities, *e.g.*, social psychology, management, policy, and some areas of biology. Finally, *computer simulation* involves different techniques for simulating phenomena on a computer, *e.g.*, discrete event, object-oriented, and equation-based simulation.

While the main focus of ABSS is in the area where all the three fields intersect, much interesting work is carried out in the areas where just two of the fields intersect. For instance, the intersection between the social sciences and agent-based computing concerns *Social Aspects of Agent Systems* (SAAS) and includes the study of norms, institutions, organizations, co-operation, competition, etc. The activities belonging to the intersection between computer simulation and agent-based computing are often labeled *Multi Agent Based Simulation* (MABS) and study the use of agent technology for simulating any phenomena on a computer. Finally, the intersection between the social sciences and computer simulation is typically called *Social Simulation* (SocSim) and corresponds to the simulation of social phenomena on a computer using any simulation technique and is typically using simple models of the simulated social entities, *e.g.*, cellular automata and objects that are able to perform only very basic interaction. [10:3095] NOTE: ABMS is now (2007) being used to study the behavior of crowds immediately following a disaster of terrorism incident. [10:3096]

AGILITY - Acronym for AGILe Information Transfer abilitY, a new (2000) mobile satellite communications system that provides high-bandwidth secure satellite communications for military platforms. The system consists of an electronically beam-steered antenna made of modular transmit/receive tiles. AGILITY features built-in countermeasures. [10:2956] NOTE: For aircraft, AGILITY automatically tracks communications satellites, compensating for the aircraft's motion, and provides REAL TIME measurements of the aircraft's altitude and heading.

AIRBEAM TECHNOLOGY - A textile manufacturing technology which employs continuous braiding or weaving of a high-strength, three-dimensional fabric sleeve over an air-retention bladder, thus providing a seamless high-strength structure. [10:2739] NOTE: A few applications for airbeam technology includes rapid deployable space structures, deployable wings, pollution containment, inflatable antennas, and beamless supports for temporary field hangars and other field shelters.

AIRBORNE COMMUNICATIONS NODE (ACN) - An UNMANNED AIR VEHICLE (UAV) designed and equipped to provide hierarchical communications services and cross linking over a broad theater of operations. []

AIRBORNE DATA RELAY (ADR) - A communications system used to extend data link ranges of UNMANNED AIR VEHICLES (AUV) or to bend a line-of-sight data link around obstacles, such as mountains. []

AIRBORNE ELECTRONIC ATTACK (AEA) - A MISSION area consisting of three activities: (1) the nonlethal SUPPRESSION OF ENEMY AIR DEFENSES (SEAD), *i.e.*, electronic jamming of radars and related communications; (2) the lethal suppression, or destruction of enemy air defenses (DEAD), *i.e.*, use of missiles or

other munitions to physically destroy enemy radars and related infrastructure; and (3) self-protection, or use of JAMMING and DECOYS to render missiles harmless to the attacking aircraft. [10:2879] See also ELECTRONIC ATTACK.

AIRBORNE LASER (ABL) - A DIRECTED ENERGY WEAPON (DEW) designed to deliver a lethal LASER beam onto a ballistic missile during the highly vulnerable boost phase of flight. The system autonomously will detect and locate a missile seconds after launch using a series of INFRARED sensors that work in tandem to target the missiles. [10:2589] The ABL consists of three critical laser systems linked by mirrors. The primary mirror both gathers in light beams and focuses them outward; other mirrors reflect the laser beams, split them, sometimes into two separate beams of different wavelengths (diachronic mirrors), steer them, and, for the killing beam, shape its wave front. A megawatt CHEMICAL OXYGEN IODINE LASER (COIL) is the primary killing beam. [10:2607] See also BALLISTIC MISSILE DEFENSE (BMD).

AIRBORNE LASER MINE-DETECTION SYSTEM (ALMDS) - An ELECTRO-OPTIC mine detection system that uses an aircraft-mounted LASER to detect floating and shallow-tethered mines. [] Formerly called MAGIC LANTERN.

AIRBORNE MINE-NEUTRALIZATION SYSTEM (AMNS) - A remotely operated expendable neutralization device that will be employed by helicopters to neutralize - with explosives - proud moored and volume sea mines that are impractical or unsafe to counter using existing mine-disposal techniques. [10:2792] See also DISTRIBUTIVE EXPLOSIVE TECHNOLOGY (DET), RAPID AIRBORNE MINE-CLEARANCE SYSTEM (RAMICS), SHALLOW-WATER ASSAULT BREACHING (SABRE) SYSTEM, SHALLOW WATER INFLUENCE MINE SWEEP (SWIMS) SYSTEM. NOTE: AMNS is a 3-foot long torpedo-like device equipped with an onboard reacquisition SONAR, a powerful headlight, and a video camera. Launched

from a helicopter, it is guided to the target by a crewman using a fiber-optic cable tethered to the AMNS. When in position, the AMNS fires a shaped charge through the mine. It is effective against mines at any depth. [10:2829]

AIRBORNE OPTICAL ADJUNCT (AOA) - A hump-backed Boeing 767 which carries a large long-wave-length infrared sensor. Used to collect data on reentry vehicles. [10:66]

AIRBORNE REMOTE OPTICAL SPOTLIGHTING SYSTEM (AROSS) - A digital camera mounted in a stabilized turret located on the underside of an aircraft that flies over a beach area. The camera collects time series data about a beach surf in the area. Analysts then examine the behavior of breaking waves to determine the location of mines in the surf. [10:2896] NOTE: This is not yet (2001) a REAL TIME system.

AIRBORNE STANDOFF MINEFIELD DETECTION SYSTEM (ATAMIDS) - (Army) A dual-mode high-resolution INFRARED system using LASER sensors. Very high resolution radars are used to locate mines lying on the surface of the ground, while infrared sensors, able to distinguish slight temperature differences, will be used to detect shallowly buried ordnance. The sensor is designed to be carried in a short-range UNMANNED AIR VEHICLE (UAV). [10:2529]

AIRBORNE TARGETING AND CROSS-CUEING SYSTEM (ATACCS) - A system designed to task multiple sensors automatically on individual targets, thereby decreasing the target-search and data-analysis time requirements of present (1999) reconnaissance systems. [10:2692]

AIR-CHISEL MINE CLEARING - A mechanized method that employs high-pressure air to rapidly uncover soil, leaves, and other debris down to and around a suspected mine without causing mine detonation. [12.1] See also WATER-JET MINE CLEARING.

AIR COMBAT MANEUVERING INSTRUMENTATION (ACMI) - A system of aircraft-mounted pods designed to capture all the moves and countermoves in airborne training exercises for monitoring, real-time kill notification, and post-mission debriefing. [10:2644]

AIRCRAFT/SHIP SECURE AND TRAVERSE (ASIST) SYSTEM - A system of LASER beacons used to guide a helicopter to the landing deck of a ship. []

AIR DEFENSE - All defensive measures designed to destroy attacking enemy aircraft or missiles in the earth's envelope of atmosphere, or to nullify or reduce the

effectiveness of such attack. See also ACTIVE AIR DEFENSE, PASSIVE AIR DEFENSE. [1.1]

AIR DEFENSE ALERTING DEVICE (ADAD) - A stand-alone guide for a soldier carrying a stinger missile. It can be fully integrated with a multiple gun or surface-to-air missile vehicle. A control panel assigns priorities for targets based on speed and direction. Several missile batteries can be tied into the unit. The system detects aircraft coming head-on from INFRARED emissions from wing edges or helicopter rotor blades. It is designed to reject false signals from sources such as birds. It is claimed that the infrared detector's passive nature renders it immune to ELECTRONIC COUNTERMEASURES. Similarly, it cannot be detected or targeted by anti-radar missiles. [10:2543]

AIR DELIVERABLE ACOUSTIC SENSOR (ADAS) - A passive non-line-of-sight distributed all-weather acoustic sensor system that provides REAL TIME (RT) continuous threat data for precision tracking of air and ground vehicles in hostile territory. []

AIR-DIRECTED SURFACE-TO-AIR MISSILE (ADSAM) ENGAGEMENT - The use of an airborne (e.g., from AEROSTATS) fire control radar to provide long-range tracking and in-flight control of interceptor missiles launched from surface and aircraft platforms in order to achieve the longest-range engagements of cruise missile threats that friendly interceptor missiles can support. [10:2837] See also JOINT LAND-ATTACK CRUISE MISSILE DEFENSE ELEVATED NETTED SENSOR (JLENS).

AIR FORCE DOMAINS - The Air Force domains are "air," "space," and (recently, *ca* 2006) "cyberspace." []

AIR SURVEILLANCE - The systematic observation of air space by electronic, visual, or other means primarily for the purpose of identifying and determining the movements of aircraft and missiles, friendly and enemy, in the air space under observations. See also COMBAT SURVEILLANCE, SEA SURVEILLANCE, SURVEILLANCE. []

ALIASING ERRORS - Errors arising in sampled-data systems when the input signal is sampled too slowly (at under twice the frequency of the highest- frequency component of the input signal). []

ALIEN - A DoD program (*ca* 2006) involving an all-source intelligence network that integrates commercial search and discovery applications, advanced link analysis, secure visualization capabilities and a cross-domain search capability called the

multidomain dissemination system (MDDS). NOTE: ALIEN will create a single database that will allow users to access real-time data where it resides. [10:3085]

ALL-GAS CHEMICAL LASER - A CHEMICAL LASER which creates its light by combining two specific gases: nitrogen chloride and atomic iodine. The device is expected to be relatively light in weight, operate in zero-gravity environments and possess a built-in heat rejection exhaust. [10:2854]

ALL ELECTRIC SHIP (AES) - A new ship concept developed by the Royal Netherlands Navy (RNLN). Because power management that controls the distribution of electrical power to the loads can be extremely rapid and flexible, the ship's war fighting capabilities can be improved. Advantages include improved survivability, since pre-hit and post-hit reconfigurations assure that power to vital loads is uninterrupted. The AES will have a reduced SIGNATURE, because there are no noisy gearboxes, and reduced thermal emissions (IR SIGNATURE), because there are no fuel exhaust stacks. The AES is expected to have reduced vulnerability to damage since prime movers can be divided over different zones and compartments and the propeller shafts can be much shorter, or PODDED PROPULSORS employed for increased maneuverability as well. The AES is expected to be fitted with DIRECTED ENERGY WEAPONS. [TNO Prins Maurits Laboratory research program announcement www.pml.tno.nl/en/pt/all_electric_ship.html]

ALTAIR - An extended-wing version of the UNMANNED AERIAL VEHICLE (UAV) Predator. Altair includes a fault-tolerant dual architecture flight control system with an automated collision-avoidance system and a voice relay capability that permits air traffic controllers to communicate with the UAV's ground-based pilots. The aircraft has an over-the-horizon data link for communications. [10:3005] NOTES: (1) Designed with flight duration up to 32 hours, the Altair has a maximum ceiling of about 52,000 feet and a range of 4,200 miles. (2) Do not confuse this with the ARPA LONG-RANGE TRACKING AND IDENTIFICATION RADAR, which has the "Altair" as an acronym.

ALTAIR Predator

AMIABILITY AGENT - A NONLETHAL WEAPON consisting of an agent which causes those with whom it comes in contact to become very easily persuadable. [10:2751]

AMPLIFIED RETURN SIGNAL - A FUZE JAMMING technique employing a REPEATER JAMMER that increases the amplitude of the returned signal to the fuze. [4:1]

AMPLITUDE - The amplitude of a sinusoidally varying quantity (WAVE) is the maximum, or peak, value of this quantity. [3] NOTE: Sometimes the *rms* (root-mean-square) value of the wave is used to characterize the amplitude of a sinusoidal oscillation.

AMPLITUDE MODULATION (AM) - The process by which a CARRIER wave (CW) is caused to vary in amplitude by the action of another wave containing information. [3] See also ANGLE MODULATION, FREQUENCY MODULATION (FM), PHASE MODULATION (PM).

AMPLITUDE MODULATION EQUIVALENT (AME) - A method of independent sideband transmission in which the carrier is reinserted at a lower level after its normal suppression to permit reception by conventional AMPLITUDE MODULATION (AM) receivers. []

ANALYZER JAMMING - A SELF-SCREENING or SUPPORT ECM technique that analyzes the received radar signal and then transmits back to the radar a false ECM-oriented signal that has the appearance of a legitimate signal, but which is actually offset in range and/or azimuth from the actual target return. [8]

ANALOG RADAR - A radar (e.g., earlier radar system) that employs analog means, such as timing circuits, for system control and signal processing. Contrast with DIGITAL RADAR. [10:2389] NOTE: Analog radars are susceptible to drift, internal and external radio frequency interference, and to temperature and humidity variations.

ANECHOIC TILE - SONAR reflectors/sound absorbers designed to provide confusing echoes. [10:41*] NOTE: Anechoic tiles are analogous to CHAFF.

ANESTHETICS - As used in NONLETHAL WEAPONs - tranquilizers, dispensed with gas or darts, that could put people to sleep. [10:2857]

ANGELS - [In EW] (1) Radar interference from natural sources. [8] (2) Radar interference caused by confusion reflectors, such as CHAFF and ROPE ... [8] (3) CORNER REFLECTORS [10:61] (4) Aircraft altitude (in kilofeet). [1.1]

ANGLE OF ARRIVAL (AOA) - The angle between the negative of the propagation vector and a reference direction. [1.1] NOTE: If the reference direction is the course vector of a target, then the angle of arrival is the same as the TARGET ANGLE with respect to the radiating source.

ANGLE MODULATION - The process of causing the angle of the CARRIER wave (CW) to vary in accordance with the signal wave. PHASE MODULATION (PM) and FREQUENCY MODULATION (FM) are two particular types of angle modulation. [3]

ANODE - (1) An electrode through which current enters any conductor of a non-metallic class. Specifically, an electrolytic anode is an electrode at which negative ions are discharged, or positive ions are formed, or at which other oxidizing reactions occur. [3] (2) (ELECTRON (VACUUM) TUBE or valve) An electrode through which a principal stream of electrons leaves the inter-electrode space. [3]

ANOMALY DETECTION - A type of INTRUSION DETECTION that infers a HACKER attack is taking place by recognizing deviations from the normal behavior of a computer or network. [10:2853] Contrast with SIGNATURE DETECTION. See also HOST-BASED INTRUSION DETECTION, NETWORK-BASED INTRUSION DETECTION, PORT SCAN.

ANONYMOUS REMAILER - An INTERNET computer service that launders the true identity of an e-mail sender by stripping away the message header before forwarding the message to the recipient, by padding the message to disguise its true length, or by encryption. [10:2815] Compare with PSEUDONYMOUS REMAILER.

ANTENNA - That part of a transmitting or receiving system that is designed to radiate or to receive electromagnetic waves. [3] NOTE: Antennas are characterized by coverage (non-directional or directional), Gain (generally in decibels), Frequency Range, POLARIZATION (linear or circular), BANDWIDTH (narrow or wide), and type. There are many types of antennas. The table below lists some antenna types. [10:2688]

ANTENNA TYPES	
Type	***Typical Polarization***
Biconical	Vertical
Blade	Vertical or Linear
Cavity Backed Spiral	R & L Horizontal
Conical Spiral	Circular
Conical Spiral, 4-arm	Circular
Diffraction Plate	Linear
Dipole	Vertical
Horn	Linear
Horn with Polarizer	Circular
Helix, Axial Mode	Circular
Helix, Normal Mode	Horizontal
Linderblad	Circular
Log Periodic	Vertical or Horizontal
Loop	Horizontal
Parabolic Dish	Depends on feed
Periscope	Depends on feed
Phased Array	Depends on elements
Reflector	Depends on elements
Swastika	Horizontal
Whip	Vertical
Yagi	Horizontal

Antennas may also be classified into four types of fundamental operation as follows [10:2706]:

TYPES OF ANTENNA ELEMENTS		
Antenna Type	***Properties***	***Examples***
Electrically Small	Very low directivity Low input resistance High input reactance Low radiation efficiency	Short dipole Small Loop
Resonant	Low to moderate gain Real input impedance Narrow bandwidth	Half-wave dipole Microstrip patch
Broadband	Low to moderate gain Constant gain with frequency Real input impedance Wide bandwidth	Spiral
Aperture	High gain Gain increases with frequency Moderate bandwidth	Horns Reflectors

. [11.2] See also SPRAY-ON ANTENNA.

ANTENNA AUXILIARY SCAN-ON-RECEIVE-ONLY - An ECCM technique that uses an auxiliary non-scanning antenna and associated receiver that is bore-sighted with the transmit-and- receive antenna of a conical scan SORO (scan-on-receive-only)

tracking system, to detect the ECM amplitude modulations on the receive signal and to use this to cancel the ECM modulation from the radar's received signal prior to angle processing within the radar. [8]

ANTENNA POLARIZATION MISMATCH - The condition that exists when a PLANE WAVE, incident upon an antenna from a given direction, has a POLARIZATION which is different from the receiving polarization of the antenna in that same direction. Contrast with POLARIZATION MATCH. []

ANTI-AIR LASER - A NONLETHAL WARFARE weapon consisting of a vehicle, ship or aircraft-based laser cannon to ground pilots or force them to veer off or risk damage to pilot vision or to the aircraft windscreen, optics or targeting sensors. [10:2648] See also BLINDING LASER.

ANTI-AIR WARFARE (AAW) - A US Navy/US Marine Corps term used to indicate that action required to destroy or reduce to an acceptable level the enemy air and missile threat. It includes such measures as the use of interceptors, bombers, antiaircraft guns, surface-to-air and air-to-air missiles, ELECTRONIC COUNTERMEASURES, and destruction of the air or missile threat both before and after it has launched. Other measures which are taken to minimize the effects of hostile air action are COVER, concealment, dispersion, DECEPTION (including electronic) and mobility. [1.1] NOTE: "Bombers" in this definition implies their air-to-air capabilities and not air-to-ground destruction of enemy aircraft, which is a strike function.

ANTI-ARMOR MATERIALS - That category of MATERIALS TECHNOLOGY which addresses materials for projectiles used to defeat enemy armor, including various types of penetrators, sabots, shaped charge liners, and their launchers. Anti-armor materials include steel, titanium, ceramics, forged or explosively formed or rolled molybdenum, tantalum, tungsten, and depleted uranium (DU). [12]

ANTI-COMMUNICATIONS WARFARE - Military action to reduce the effectiveness of enemy communications. []

ANTIJAM DATA LINKING - The establishing of data links which have the capability to counter jamming. []

ANTI-MATERIEL CHEMICALS/BIOLOGICALS - NONLETHAL WEAPONS involving materials to block access to bridges, roads, sea lanes and other means of passage; and to contaminate fuel and render high-explosives ineffective. [10:2648]

ANTIMATTER PARTICLE BEAM (APB) - A DIRECTED ENERGY WEAPON (DEW) under DoD's WEAPONS SYSTEMS TECHNOLOGIES (WST). The

generation, propagation and control of antimatter beams of hydrogen or its isotopes. Interaction of the APB with a target consisting of normal matter results in complete annihilation of the beam and an equal amount of normal matter in the target. [*www.dtic.mil*] NOTE: APBs must be charged to be accelerated, but exoatmospheric beams must be neutralized so that the repulsion of like-charged particles will not spread the beam to a noneffective power density before it reaches the target. APBs potentially have only exoatmospheric, or space, applications because the atmosphere would erode them significantly. See also CHARGED PARTICLE BEAM (CPB), GAMMA-RAY LASER (GRASER), HIGH POWER MICROWAVE/RADIO FREQUENCY (HPM/RF), KINETIC ENERGY WEAPON (KEW) and NEUTRAL PARTICLE BEAM (NPB).

ANTI-PERSONNEL BEAM WEAPON (APBW) - A NONLETHAL WEAPON LASER device, similar to the TASER, designed to stun a person or freeze him in his tracks. In place of the TASER's wires to carry the stun charge, the APBW employs two ultraviolet light laser beam to create two charged channels of ionized air that carry the disabling electrical current for a distance of up to 100 meters. [10:2952] See also VEHICLE-DISABLING WEAPON (VDW). NOTE: It is claimed that while the APBW current had a repetition rate sufficiently rapid to tetanize (*Tetanization is the stimulation of muscles fibers at a frequency which merges their individual contractions into a single sustained contraction.*) muscle tissue, it is insufficient to affect the muscles of the heart and diaphragm. In addition, the APBW will not incur retinal damage because the cornea absorbs all the ultraviolet radiation at the wavelengths used. Moreover, the beams are too weak to produce photokeratis (corneal inflammation) unless they are directed at the eyes for several minutes.

ANTI-PERSONNEL ENTANGLEMENTS - See ENTANGLEMENTS.

ANTI-PERSONNEL OBSTACLE BREACHING SYSTEM (APOBS) - A man-portable device capable of quickly creating a footpath through anti-personnel (AP) mines and wire entanglements. [U.S. Army Field Manual *FM 3-34.2*] NOTE: APOBS includes a portable line charge that is rocket-propelled over the obstacles from a standoff position on the obstacles field's edge.

ANTI-RADIATION MISSILE (ARM) - A missile which homes passively on a radiation source. [1.1] See also HIGH SPEED ANTI-RADIATION MISSILE.

ANTI-RADIATION MISSILE (ARM) DECOY - A miniature radar transmitter designed to protect radars in the field. The DECOY provides protection by emulating the transmission characteristics of the protected radar, thereby deceiving the incoming missile. [10:94]

ANTIREFLECTION OVERCOAT - A coating of material, such as poly-tetrafluoroethylene, which reduces the reflectance of a material at infrared wavelengths. [10:4] See also RADAR CAMOUFLAGE.

ANTISUBMARINE ROCKET (ASROC) - See ASROC.

ANTISUBMARINE WARFARE (ASW) - (1) Operations conducted with the intention of denying the enemy the effective use of his submarines. [1.1] (2) The destruction or neutralization of enemy submarines. [2]

ANTI-SURFACE SHIP WARFARE - See ANTISURFACE WARFARE.

ANTISURFACE WARFARE (ASUW) - The destruction or neutralization of enemy surface combatants and merchant ships. Its aim is to deny the enemy the effective use of his surface warships and cargo carrying capacity. Synonymous with ANTI-SURFACE SHIP WARFARE. [2]

ANTI-SURVEILLANCE WARFARE - Military action intended to reduce the effectiveness of enemy surveillance operations. []

ANTI-TARGETING WARFARE - See COUNTER-TARGETING.

ANTI-TORPEDO TORPEDO (ATT) - A specialized small-diameter torpedo that tracks and destroys incoming underwater projectiles. The ATT uses digital signal processing and FUZZY LOGIC to identify, track and intercept incoming torpedoes running in a variety of attack patterns. [10:2875]

ANTI-TRACTION LUBRICANT A NONLETHAL WEAPON consisting of a lubricant applied to roadways which reduces friction of the surface and adversely affects the traction of vehicle wheels and tracks on the treated surfaces such as roads, runways, and tracks. [10:2754] A Teflon-type environmentally neutral lubricant that make footholds or traction exceedingly difficult. In this application, the product can be used to deny access to areas or cover a unit's flank. [10:2857]

APPLIQUE - The Army's "Force XXI Battle Command Brigade-and-Below ($FBCB^2$)" initiative to digitize the battlefield. [10:2740]

ARCHITECTURAL DESIGN - The process of defining a collection of hardware and software components and their interfaces to establish a framework for the development of a system. [10:33] NOTE: The architectural design process begins with the identification of functions which must be performed by the system in order to meet specified requirements. These functions are then allocated to software, hardware, or humans comprising the system. Differing allocation schemes become "architectural alternatives", and the chosen alternative results from consideration of various criteria and constraints, such as cost and manning. System inputs, outputs, internal and external interfaces, data sources and destinations, data stores, and transformation processes are all identified, diagrammed, and described in the architectural documentation.

ARCHITECTURE - See SYSTEM ARCHITECTURE; SOFTWARE ARCHITECTURE.

ARCNET - See ATTACHED RESOURCE COMPUTER NETWORK

AREA DENIAL SYSTEM (ADS) - Self-contained, semi-autonomous, long standoff munitions that can defend an area by defeating, disrupting, and delaying vehicles that enter its battlespace. [10:2724]

AREA JAMMING SUPPORT - An ECM tactic in which the aircraft jams long-range systems over a wide area to mask incoming attack aircraft. [10:2521] See also CORRIDOR JAMMING SUPPORT, DIRECT JAMMING SUPPORT, STAND-OFF JAMMING SUPPORT, TARGET AREA JAMMING SUPPORT.

ARMED DECOY - A DECOY able to inflict damage, thereby forcing the enemy to engage it even if it is recognized as a decoy. [4:23] See also REMOTELY PILOTED VEHICLE, ANTI-RADIATION MISSILE, CRUISE MISSILE, AUTONOMOUS DECOY.

ARMOR MATERIALS - That category of MATERIALS TECHNOLOGY which addresses materials specifically designed to protect equipment and personnel from enemy threats. Armor materials include metals and related composites (e.g., titanium diboride), ceramics and related composites (e.g., crystal whiskers in a bonded matrix), organic fibers and composites (e.g., arrays of woven cloth), and layered combinations of these. [12]

ARMY TARGET SENSING SYSTEM (ATSS) - A generic term for SMART WEAPONS, sensors, processors, and Aviation Survivability Equipment (ASE) that rely on SIGNATURES for TARGETING, recognition, identification, and warning. These systems use signature data (radio frequency, ACOUSTIC, ELECTRO-OPTIC, and other parametric data) to identify specific targets or events. Signatures are analyzed and compared to stored libraries to identify distinctive features associated with the source emitter to facilitate the identification and targeting process. [Fort Monmouth, NJ Web page (cited on 1/30/2002) http://arat.iew.sed.monmouth.army.mil/ARAT/ARAT_information/arat_terms/list.htm ; newer link (2003) is: http://www.sec.army.mil/arat/] NOTE: To be useful, ATSS devices must be capable of being rapidly reprogrammable to accommodate modifications in potential threat system signatures.

ARPA LINCOLN C-BAND OBSERVABLE RADAR (ALCOR) - An Army-operated radar located on the Kwajalein Atoll in the western Pacific. It has two missions, Anti-Ballistic Missile (ABM) testing in support of the Western Space and Missile Center

(WSMC) and space surveillance. ALCOR is a Near-Earth (NE) tracking radar. [10:2804] NOTE: ALCOR is unique because it is the only radar besides Haystack that can provide wideband Space Object Identification. [10:2804] ALCOR is one of the 25 sites worldwide of U.S. Army, Navy and Air Force operated ground-based radars and optical sensors composing the Space Surveillance Network. Two other radars are the ARPA Long-range Tracking and Identification Radar (ALTAIR) and the TRADEX (Target Resolution and Discrimination Experiment).

ARPA LONG-RANGE TRACKING AND IDENTIFICATION RADAR (ALTAIR) - A high-resolution radar located at Kwajalein Atoll in the western Pacific that provides precision metric, signature, and imaging for deep-space operations, satellite observations, strategic reentry missions, and multiple-intercept engagement tracking. ALTAIR is a Near-Earth (NE) and Deep Space (DS) tracking radar. ALTAIR has two missions: Anti-Ballistic Missile (ABM) testing in support of the Western Space and Missile Center (WSMC) and space surveillance. [10:2804] NOTE: ALTAIR is unique because it is the only radar in the Space Surveillance Network with an equatorial location. ALTAIR can track one third of the objects in the geosynchronous belt, more than 42,000 tracks per year. [10:2804] ALTAIR is one of the 25 sites worldwide of U.S. Army, Navy and Air Force operated ground-based radars and optical sensors composing the Space Surveillance Network. Two other radars are the ARPA Lincoln C-Band Observable Radar (ALCOR) and the TRADEX (Target Resolution and Discrimination Experiment).

ARRAY ANTENNA - An antenna comprised of a number of identical radiating elements in a regular arrangement and excited to obtain a prescribed radiation pattern. [3] See also PHASED ARRAY ANTENNA.

ARTIFICIAL EYELID - A MICROELECTROMECHANICAL device consisting of a surface covered by tiny shutters, ranging in size from about a millimeter to 50 micrometers. In the transparent state, the shutters are open, like an open Venetian blind. When a sensor detects light, the shutters quickly (about 100 microseconds) snap closed, presenting an opaque surface to the light. [10:2813] NOTE: The primary application of the artificial eyelid is to protect military pilots and equipment from disabling laser attacks. The artificial eyelid also has potential consumer applications, such as programmable sunglasses, or advanced camera lenses.

ARTIFICIAL INTELLIGENCE (AI) - Computerized reasoning. Branches of AI include EXPERT SYSTEMS, robotics, and knowledge representation. []

ARTILLERY DELIVERED ANTIPERSONNEL MINE (ADAM) - One of a number (e.g., 36) of mines contained in an artillery shell. When the mines fall from the disintegrating shell they release a tripwire-fired, pop-up fragmenting warhead. Each mine ejects several tripwires that, when disturbed, trigger the mine to jump four to eight feet in the air and spray shrapnel across a forty-foot area. [10:2735] NOTE:

ADAM is in the class of SMART MINEs. ADAM has been adapted for hand-emplacement and has evolved into the Pursuit Deterrent Munition (PDM)

ASPHALT ABLATION - A ballistic missile countermeasure involving deployment of an asphalt cloud in the exoatmosphere in front of an incoming missile. The asphalt particles cling to the warhead, and during re-entry the asphalt ignites and ablates unevenly, degrading the missile's accuracy. [8*]

ASROC - Acronym for Anti-Submarine Rocket. ASROC is a weapon consisting of a rocket booster used to deliver a payload torpedo or depth-charge over an extended distance, providing long-distance ASW capability. When launched, the ASROC proceeds to the area of the target, releases the weapon which deploys a parachute to slow the weapon before entering the water. After entering the water, the weapon begins its programmed target acquisition maneuvers. [] NOTE: The ASROC launcher is usually trainable in azimuth and elevation. If the launcher is fixed in the vertical plane, then the weapon is a VERTICAL-LAUNCH ASROC (VLA).

ASSEMBLY LANGUAGE - A programming language that corresponds closely to the instruction set of a given computer, allows symbolic naming of operations and addresses, and usually results in a one-to-one translation of program instructions into MACHINE LANGUAGE. [3]

ASSOCIATION OF OLD CROWS (AOC) – A not-for-profit international professional association with more than 13,000 members and 200+ organizations engaged in the science and practice of Electronic Warfare (EW), Information Operations (IO), and related disciplines

ASYMMETRICAL MILITARY FORCE - A military force that does not attempt to match the size of that of an adversary, but is designed to exploit the weakness of the larger force. The asymmetrical military force would be small, mobile, elusive, efficient, inventive and high-tech. []

ASYMMETRIC ENGAGEMENT - A battle between dissimilar forces. [JCS Pub 1, 1995, pp. Iv-10, iv-11]

ASYMMETRIC WARFARE - (1) Warfare between dissimilar forces. (2) War between two sides with dissimilar goals. (3) Warfare in which new technology is used to defeat the superior with the inferior. (4) Warfare which encompasses anything - strategy, tactics, weapons, personnel - that alters the battlefield to negate one side or the other's advantage. [] NOTES: (1) Asymmetric warfare has been described as "not fighting fair". There are many "definitions" of asymmetric warfare, as the forgoing suggests. These descriptions come from the web site: http://www.amsc.belvoir.army.mil/asymmetric_warfare.htm. (2) According to the Defense Advanced Research Project Agency (DARPA), "The most serious asymmetric threat facing the United States is terrorism, a threat characterized by collections of people loosely organized in shadowy networks that are difficult to identify and define." [DARPA's Total Information Awareness Office (IAO) Vision statement, 2002]

ASYNCHRONOUS COMMUNICATIONS - A communications PROTOCOL in which data are transferred serially. Each transmitted character is preceded by a start bit and followed by a stop bit. [10:45] Contrast with SYNCHRONOUS COMMUNICATIONS.

ATMOSPHERIC INFRARED SOUNDER (AIRS) - A sensor (to be launched in late 2000) that can measure Earth's air temperatures from space with great precision, allowing accurate weather predictions. The AIRS will read atmospheric temperatures to within one degree Celsius in 1-kilometer layers of altitude in the Earth's lower atmosphere. AIR's high-resolution spectrometer will sample precisely the Earth's atmosphere from the ground up to 30 miles. [10:2805]

ATOMIC-LEVEL MANUFACTURING - The construction of materials that do not occur naturally by depositing atoms in layers which are spaced to achieve the desired effect. [10:2834] NOTE: An example of this approach is the VERTICAL CAVITY SURFACE-EMITTING LASER (VCSEL).

ATTACHED RESOURCE COMPUTER NETWORK (ARCNET) - A LOCAL AREA NETWORK (LAN) employing a token-passing PROTOCOL. [] NOTE: In an ARCNET, nodes have equal access to the network, eliminating transmission collisions on busy networks.

AUTO-ID - A system comprising an electronic tag containing a microchip that can, in REAL TIME, wirelessly store and transmit data to a reader device. The processor uses the Electronic Product Code (EPC), a 96-bit code that can identify more than 80 thousand trillion trillion individual items. Data about an item, which may include information such as shipping instructions, inspection schedules, location, expiration dates, technical manuals associated with the item, and more, are stored in a database, where its EPC serves also as an Internet address. [10:3007] NOTE: For certain sensitive items such as food and medical supplies, the EPC may also contain information regarding the environment experienced by the item, *e.g.*, temperature, vibration, rough handling, and chemical or biological contamination

AUTOMATED RADAR PLOTTING AID (ARPA) - An INTEGRATED BRIDGE SYSTEM (IBS) sub-system that automatically acquires and tracks contacts, providing timely information to watchstanding personnel. []

AUTOMATIC GAIN CONTROL (AGC) - A process or means by which gain is automatically adjusted in a specified manner as a function of input or other specified parameters. [3]

AUTOMATIC GAIN CONTROL DECEPTION - A SELF-SCREENING ECM technique that produces angle errors in a conical scan and some MONOPULSE tracking radars that use AGC. [8]

AUTOMATIC LOCAL OSCILLATOR TUNING - An ECCM technique wherein the radar's local oscillator is tuned either side of its normal setting to see if the target signal ECHO can be more easily detected in a JAMMING environment. [8]

AUTOMATIC SPOT NOISE (ASN) JAMMING -- Automatic transmission of a jamming response when a programmed victim signal has been detected. The jammer automatically adjusts its jamming frequency to that of the victim signal. Also called RESPONSIVE SPOT NOISE (RSN) JAMMING. []

AUTOMATIC VIDEO NOISE LIMITING - An ECCM technique where the NOISE level out of the radar receiver is maintained constant by a closed-loop feedback system that varies the gain of the video amplifier. [8]

AUTOMATIC VOICE NETWORK (AUTOVON) - Formerly, the principal long-haul, unsecure voice communications network within the Defense Communications System, superseded by the DEFENSE SWITCHED NETWORK (DSN). [] See also COMBAT CIDERS.

AUOVON SWITCHING CENTERS

Thanks to Albert LaFrance - Cold War Communications Aficionado

AUTONOMIC COMPUTING - Computing which includes the ability respond to problems, repair faults, and recover from system outages without the need for human intervention. [10:2921]

AUTONOMIC HEALING - The automatic dispersing of a series of microspheres that contain a healing agent and a catalyst in a polymeric composite. When a crack propagates in the treated material, stress causes the closest spheres to break open and release the healing agent and catalyst which generate a chemical reaction to polymerize and heal the crack through capillary action, bonding the crack faces to each other. [10:2904] Also called MICROENCAPSULATED HEALING AGENT, HEALING AGENT.

AUTONOMOUS BENTHIC EXPLORER (ABE) - An AUTONOMOUS UNDERWATER VEHICLE (AUV) designed to perform a predetermined set of maneuvers to take photographs and collect data and samples within an area about the size of a city block. During long deployments, ABE enters a "sleep" mode to conserve power, allowing for months of repeating its tasks. ABE is about 10 feet long with a beam of approximately 5.5 feet and a height of 5 feet. It is propelled by seven thrusters and can operate at depths up to 20,000 feet. Dive durations are from 6 hours to one year. [Woods Hole Oceanographic Institute

www.whoi.edu/home/marine/abe_main.html] See also REMOTE ENVIRONMENTAL MONITORING UNITS (REMUS).

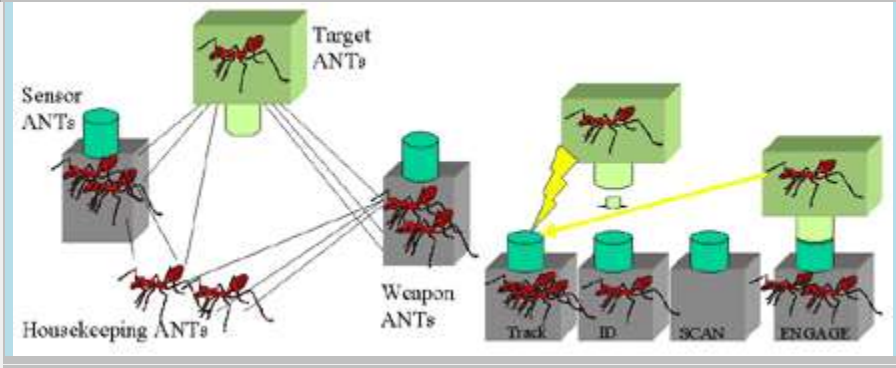
AUTONOMOUS DECOY - A self- propelled platform which emulates a protected unit, for example, a self-propelled surface acoustic DECOY playing a tape recording of ship sounds. [4:23]

AUTONOMOUS INTELLIGENT NETWORK AND SYSTEMS (AINS) - A DARPA initiative (*circa* 2002) for developing a system intended to operate independently from the Global Positioning System (GPS) with a "pseudo-GPS" system in the event the former is jammed by an adversary. AINS would link various unmanned and manned systems without the need for human intervention, except to assign specific tasks. [10:2987]

AUTONOMOUS NAVAL SUPPORT ROUND (ANSR) - A rocket-assisted gun projectile that has long range, high speed, and great accuracy. Its accuracy is provided by a miniaturized guidance package that combines Global Positioning System (GPS) and inertial-sensor technologies. The ANSR destroys its targets by dispensing metal fragments embedded in a composite matrix. [10:2931] See also ADVANCED GUN SYSTEM (AGS), BARRAGE ROUND.

AUTONOMOUS NEGOTIATING TEAM (ANT) - The automated negotiation among units to assign and customize resources and weapons to tasks such as moving targets. ANTs will emphasize local, rather than global, information for mission accomplishment. [10:2955] NOTE: A system, based on ANT, has been developed to assist in the decision-making process for management of combat air squadrons. Here, the individual ANT modules represent different concerns and goals. The modules communicate with each other, share information, and overrule or yield according to a set of predetermined priorities. The result is a set of alternative schedules for air operations. [10:2967]

AUTONOMOUS NEGOTIATING TEAM (ANT) Concept



Source: DARPA

AUTONOMOUS TARGET RECOGNITION (ATR) - The ability of a weapon to locate and engage a target without data updates or guidance from external sources. ATR involves automated high speed signal or imaging processing, rapid data base management and high fidelity classification and correlation. Contrast with MAN-IN-THE-LOOP SYSTEMS. See also BRILLIANT AMMUNITION, SMART WEAPON. [10:31] NOTE: The three primary components of ATR: algorithms, processors, and sensor technology.

AUTONOMOUS UNDERWATER VEHICLE (AUV) - A sub-group of UNMANNED UNDERWATER VEHICLEs consisting of autonomous, untethered craft that can execute a variety of missions, generally of the type too dangerous for manned submersibles or divers. Contrast with REMOTELY OPERATED VEHICLE. [10:46]

AUTONOMOUS UNTETHERED VEHICLE (AUV) - An AUTONOMOUS UNDERWATER VEHICLE (also AUV) designed to operate at ocean depths as great as 13,000 feet. Also called INNER SPACE SATELLITE. []

AUTOVON - See AUTOMATIC VOICE NETWORK.

AUTOVON WIDEBAND - See COMBAT CIDERS.

AVATAR - In a VIRTUAL ENVIRONMENT, a three-dimensional image (which may also include live video) that serves as a stand-in for the person who controls it. Its motions, gestures, and speech may be derived from the user's voice, keyboard, or other input device. More generally, an avatar is a representation of any object functioning in a virtual world, and so its meaning may cover graphical representations of BOTs and AGENTs. [10:2595]

AVIONICS - All of the electronics systems contained in an aircraft. []

AZIPOD® - The Azipod® system is an azimuthing electric propulsion drive where the propulsion motor is installed inside a submerged azimuthing (unlimited 360 degrees) pod and coupled directly to an extremely short propeller shaft. The variable speed electric (AC/AC) drive produces smooth torque over the entire ship's speed range including zero speed. [10:2971] NOTE: In addition to savings in weight, space and construction hours, Azipods eliminate the need for rudders, long shaft lines, steering gear, conventional drive units and stern thrusters, thus occupying less overall space on-board the vessel. They are also designed to make the ship easier to steer and maneuver, while achieving fuel savings through improved hydrodynamic efficiencies.