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SACRIFICIAL WINDOW - A replaceable filter in a night vision device that is provided to protect the objective lens from abrasive and adverse conditions. It is especially useful in blowing-sand environments, where the objective lens could be damaged permanently. [10:2502]

SALUTE - A mnemonic acronym for "Size, Activity, Location, Unit (identification), Time, Equipment." It is employed by infantry scouts to report enemy sightings to headquarters:

| | | |
|----------|------------------|---|
| S | Size | Number of troops and approximate size and type of unit. |
| A | Activity | Observed activity of the enemy. |
| L | Location | Position of enemy using map grid references. |
| U | Unit | Identity of enemy unit or description of markings, uniforms, equipment. |
| T | Time | Date-Time-Group of sighting. |
| E | Equipment | Number and description of weapons or equipment. |

SALVAGE FUZE - A fuze designed to cause an aircraft bomb to detonate (at a preset altitude, say) in the event the carrying aircraft is disabled. [] See also **SPECIAL WEAPONS EMERGENCY SEPARATION SYSTEM (SWESS)**.

SALVO INTERVAL - The time between salvos or bursts of decoys. [] Contrast with **EJECTION INTERVAL**.

SANCTUARY BASE - A secure, **LOW OBSERVABLE (LO)**, all-weather forward operating base having minimal assets requiring protection from attack; *e.g.*, the runway, power systems, ordnance storage, aircraft maintenance assets, and **C⁴I** systems are self-maintaining and self-repairing. Chemical/biological hazards are cleaned up by **NANOBOTS** and biotechnology. Robots perform refueling, weapons loading, maintenance, security, and explosive ordnance disposal. [USAF 2025 Study]

SANDBOX - An isolated computer system in which administrators can safely test new software. [10:2964]

SATELLITE AND MISSILE SURVEILLANCE - The systematic observation of aerospace for the purpose of detecting, tracking, and characterizing objects, events, and phenomena associated with satellites and in-flight missiles, friendly and enemy. [1.1] See also SURVEILLANCE.

SATELLITE COMMUNICATIONS (SATCOM) SYSTEM - A system consisting of *space elements* and *ground elements*. The space elements comprise satellites, either in geo-synchronous earth orbit (GEO) or low earth orbit (LEO), as well as all of the equipment required for their electronic and station-keeping operations. The ground elements consist of a transmitter and a receiver which may be combined into a single transceiver, an antenna, power supplies and appropriate packaging and transport in the case of mobile units. [10:2578]

SATELLITE RADIO COMBINER - Specialized communications equipment that provides simultaneous transmission and reception of military UHF Satellite radio channels. To prevent co-site interference, extensive transmit and receive filtering is employed. Multiple modes of operation allow users flexibility in configuring communication nets. [*Product description*]

SCAN - (1) The path periodically followed by a radiation beam. [1.1] (2) In ELINT, the motion of an electronic beam through space searching for a target. Scanning is produced by the motion of the antenna or by LOBE SWITCHING. [1.1] (3) To examine sequentially part by part. [3]

SCANNING - A repetitive motion given to the major lobe of an antenna. [3]

SCANNING DETECTOR - A detector that observes successive portions of its field of view in accordance with a sequential system of scan. [10:16] Contrast with STARING DETECTOR.

SCAN ON RECEIVE ONLY (SORO) - A generic term for an ECCM technique for use on conical scan or track-while-scan radars. It consists of degrading hostile SELF-SCREENING ECM techniques that exploit amplitude modulation. [8*]

SCAN PERIOD - The period taken by a radar, sonar, etc., to complete a scan pattern and return to a starting point. [1.1]

SCAN RATE - The rate at which individual scans are recorded. [1.1]

SCAN SCHEDULE - The DWELL TIME and the REVISIT TIME of a sensor. [10:2812] NOTE: The SCAN SCHEDULE for a rotating radar antenna is defined by the antenna beam width and the mechanical rotational rate. See also ADAPTIVE SCHEDULER.

SCAN TYPE - The path made in space by a point on the radar beam; for example, circular, helical, conical, spiral, or sector. [1.1]

SCARAB - A MINIBOT which contains smaller systems such as a portable micro gas chromatograph (designed to fit on a dime-size chip). [10:3118]

SCATTERING - A process in which the energy of a traveling wave is dispersed in direction due to inhomogeneities of the medium. [3] See also BACKSCATTERING, RADAR SCATTERING.

SCATTERING WITH ANGULAR LIMITATION PROJECTION ELECTRON BEAM LITHOGRAPHY (SCALPEL) - A technique used in the manufacture of transistor circuits. [10:2638]

SCENARIO - A narrative describing a chronological sequence of events expected to take place immediately prior to and during a conflict between opposing military forces. A scenario contains the following: A Geographical Location (e.g., Eastern Mediterranean); A general description of the objectives, missions and intentions of both sides; The OPERATIONAL SETTING; and A chronology of activities. []

SCIENTIFIC AND TECHNICAL INTELLIGENCE - The product resulting from the collection, evaluation, analysis, and interpretation of foreign scientific and technical information which covers: a. foreign developments in basic and applied research and in applied engineering techniques; b. scientific and technical characteristics, capabilities, and limitations of all foreign military systems, weapons, weapon systems, and materiel, the research and development related thereto. and the production methods employed for their manufacturer. [1.1] See also FOREIGN INSTRUMENTATION AND SIGNALS INTELLIGENCE.

SCINTILLATION JAMMING - An ECM technique that operates by generating a signal which is both equal in amplitude to and 180 degrees out of phase with the actual SKIN PAINT signal from the jamming platform, and is returned to the victim radar simultaneously with the skin-return signal to provide a zero composite return to the radar. [8]

SCREEN - (1) In SURVEILLANCE, CAMOUFLAGE and concealment, any natural or artificial material, opaque to surveillance sensor(s); interposed between the

sensor(s) and the object to be camouflaged or concealed. [1.1] (2) A security element whose primary task is to observe, identify and report information, and which only fights in self-protection. [1.1] (3) A computer display terminal. []

SCREEN SCRAPING - The use of a computer program to translate between LEGACY application programs and new user interfaces so that the logic and data associated with the legacy programs can continue to be used.

[<http://www.whatis.com/screensc.htm>] Also called ADVANCED TERMINAL EMULATION. NOTE: A program that does screen scraping must take the data coming from the legacy program that is formatted for the screen of an older type of "green on black" display terminal and reformat it for a Windows user or for a web browser.

SCRIPT KIDDY (plural: SCRIPT KIDDIES) - An inexperienced HACKER who employs prepackaged software to conduct attacks against well-known vulnerabilities. [10:2964]

SEA BOUNCED JAMMING - A JAMMING signal reflected from the sea surface. []

SEA POWER 21 - The current (2002) U.S. Navy vision to guide it in national defense. SEA POWER 21 is comprised of the triad *Sea Strike* - the projection of precise and persistent offensive power, *Sea Shield* - the projection of global defensive assurance, and *Sea Basing* - the projection of joint operational independence. This triad is integrated and enabled with an operational construct and architectural framework called **ForceNet**. [10:2960] NOTES: (1) *Sea Strike* includes the following capabilities: Persistent intelligence, SURVEILLANCE, and RECONNAISSANCE, Time-sensitive STRIKE, ELECTRONIC WARFARE (EW) / information operations, Ship-to-objective maneuver (STOM), and covert strike; *Sea Strike* employs the following technologies: Autonomous, organic, long-dwell SENSORS, Integrated national, theater, and force sensors, Knowledge-enhancement systems, Unmanned combat vehicles, Hypersonic missiles, ELECTROMAGNETIC RAIL GUNS (EMRs), and HYPER-SPECTRAL IMAGING. (2) *Sea Shield* includes the following capabilities: Homeland defense, Sea / littoral superiority, Theater air missile defense, and Force entry enabling; *Sea Shield* employs the following technologies: Interagency intelligence and COMMUNICATIONS REACH-BACK SYSTEMS, Organic MINE COUNTERMEASURES, Multi-sensor cargo inspection equipment, Advanced hull forms and modular mission payloads, DIRECTED-ENERGY WEAPONS, Autonomous unmanned vehicles, Common undersea picture, Single integrated air picture, Distributed weapons coordination, and Theater missile defense. *Sea Basing* includes the following capabilities: Enhanced afloat positioning of joint assets, Offensive and defensive power projection, Command and control (C²), Integrated joint logistics, and Accelerated deployment and employment timelines. *Sea Basing* employs the following technologies: Enhanced sea-based joint command and control, Heavy equipment transfer capabilities, Intra-theater high-speed sealift, Improved vertical delivery methods, Integrated joint logistics, Rotational crewing infrastructure, and International data-sharing networks.

SEARCH ENGINE - Web-based software which locates Web sites which satisfy user queries (e.g., keywords). Well-known search engines (1999-2000) include *AltaVista*, *AOL Search*, *Ask Jeeves*, *Excite*, *Google*, *HotBot*, *Infoseek*, *Lycos*, *MSN Search*, *Netscape Search*, *WebCrawler*, and *Yahoo* (there are many others). [] NOTE: Search engines may be classified into two search-technique groups: keyword search engines (e.g., *Yahoo*), and natural language search engines (e.g., *Ask Jeeves*).

SEARCHLIGHTING - Continuous illumination with a radar beam, for a period of time, of a target. []

SEA SHADOW - A small waterplane area, twin-hull (SWATH) boat originally built to explore low-observable technology. The craft resembles a wingless STEALTH aircraft. [Navy News & Undersea Technology, 5/24/93, pp. 1,8]

SEA SKIMMER - A missile designed to transit at less than 50 feet (or 15 meters) above the surface of the sea. [1.1]

SEA SURVEILLANCE - The systematic observation of surface and subsurface sea areas by all available and practicable means primarily for the purpose of locating, identifying and determining the movements of ships, submarines, and other vehicles, friendly and enemy, proceeding on or under the surface of the world's seas and oceans. [1.1] See also AIR SURVEILLANCE, COMBAT SURVEILLANCE, SURVEILLANCE.

SECONDARY MASS STORAGE - Mass storage media which is neither random-access hard drive nor streaming tape, but is characterized by large sequential data transfer. See also MAGNETO OPTICAL RECORDING. []

SECONDARY RADAR - (1) A radar in which the return signals are obtained from a beacon, transponder, or repeater carried by the target. [3] (2) A

RADIODETERMINATION system based on the comparison of reference signals with radio signals retransmitted from the position to be determined. [FS-1037C] Contrast with PRIMARY RADAR. Synonymous with SECONDARY SURVEILLANCE RADAR.

SECONDARY SURVEILLANCE RADAR - See SECONDARY RADAR.

SECOND GENERATION LANGUAGE (2GL) - 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 instructions. [3*] Synonymous with ASSEMBLY

LANGUAGE. See also FIRST GENERATION LANGUAGE, THIRD GENERATION LANGUAGE, FOURTH GENERATION LANGUAGE.

SECOND GENERATION RADAR SIGNAL - A generic classification of radar signal sophistication. Second generation radar signals feature modulation on carrier, pulse repetition interval staggering/jittering/coding, mixtures of mechanical and electronic beam scanning, frequencies in the A through J bands of the ELECTROMAGNETIC SPECTRUM, and FREQUENCY AGILITY. [10:34] See also FIRST, THIRD, and FOURTH GENERATION RADAR SIGNALS.

SECURITY LEVELS - The following are excerpts relating to security ratings per the National Computer Security Center's "Orange Book" (1993): [10:2510]

- **Level D** - *Minimal Protection*; no built-in security.
- **Level C1** - *Discretionary Security Protection*; systems provide separation of users and data....
- **Level C2** - *Controlled Access Protection*; makes users individually accountable for their actions through log-in procedures and audit trails.
- **Level B1** - *Labeled Security Protection*; all the protection of C2 level. In addition, access control beyond password protection,...
- **Level B2** - *Structured Security Protection* ("relatively resistant to penetration"); B2 level protection extended to all system resources. Systems must be structured from the outset to be penetration resistant....
- **Level B3** - *Security Domain* "highly resistant to penetration"); B3 systems must exclude any code that is not essential to security policy enforcement....
- **Level A1** - *Verified Design Protection*; functionally equivalent to B3, but formally documented, and the security policy of the system must be proven - mathematically if need be - to be consistent with stated security goals....

SECURITY ROBOT - A mobile automaton, or robot, consisting of a navigating system (to move in an obstacle environment) and a sensor array, or security patrol instrumentation (SPI). The SPI may include sensors for detecting fires, smoke, gas, and intruders, monitoring air quality, temperature, humidity, and identifying persons encountered. Sensors can include cameras, infrared, ultraviolet, and microwave detectors. The security robot can be made to record data as a function of time and location, activate alarms, and track multiple targets. Several robots may be controlled in a facility through use of Multiple Robot Host Architecture (MRHA) that can accommodate (1994) as many as 32 robots. [10:2565]

SEDUCTION - The successful transfer of homing guidance (track lock) of a weapon from own ship to an expendable device such as CHAFF, IR FLARE, or other DECOY. [10:126] See also DISTRACTION.

SEDUCTION CHAFF - CHAFF used to present a decoy of comparable (or larger) **RADAR CROSS SECTION** to a missile radar which has already acquired the target ship. See also **DISTRACTION CHAFF**. [4:16] **NOTE:** **SEDUCTION CHAFF** must be deployed very close -- less than a missile radar pulse width -- to the target ship.

SEEKER - A device that orients a munition's sensor to survey, acquire, lock-on, and track a target. [12] Example: A homing device carried aboard a missile.

SEEKERLESS WEAPON - A standoff weapon capable of maneuvering to hit moving targets based on **GLOBAL POSITION SYSTEM (GPS)** satellite data. It features a two-way datalink that provides continuous connectivity to the GPS, permitting it to accurately strike a target without a seeker device. [10:3003] **NOTE:** The seekerless weapon employs Precision Navigation (PNAV) technology to permit the weapon to land within four meters of its target.

SEISMOACOUSTIC ARRAY - A set of sensitive sound devices used to monitor wave and current dynamics and beach surf conditions. [10:2675] **NOTE:** Seismoacoustic arrays located as far as 2.2 miles offshore have been found to be capable of detecting and tracking land and vehicle activity.

SELECTIVE AVAILABILITY (SA) - Measures taken to prevent an enemy from using the **GLOBAL POSITIONING SYSTEM (GPS)** against the U.S. To thwart such usage, the ground-control station can deliberately introduce satellite timing and position errors into satellite transmissions to reduce the accuracy of civilian and unauthorized users to 100 meters 80% of the time -- enough for navigation but inadequate for weapons delivery. [10:2599] **NOTE:** The effects of selective availability can be virtually eliminated in a local area through differential GPS (DGPS), a technique requiring two receivers, one of which is at a known location.

SELECTIVE CALL (SELCAL) - A paging system mainly employed between aeronautical ground stations and aircrafts. The system is widely used on commercial aeronautical HF (3-30 MHz) radio circuits and by some military aeronautical stations, Canada being an example. The SELCAL code is comprised of a series of 4 letters representing a specific sequence of audio tones that much resemble those of a TouchTone™ telephone. The SELCAL is transmitted by the ground station to an aircraft's HF radio set. Upon successful reception of a SELCAL page, the aircraft's SELCAL visual indicator and annunciator alert the pilot/communications officer that the aircraft's HF radio has been addressed and that a ground station wishes to communicate with it. [Richard *LaCroix's Military Communications Home Page* at <http://www.milspec.ca/>].

SELECTIVE IDENTIFICATION FEATURE (SIF) - A capability which, when added to the basic Identification Friend or Foe (IFF) system, provides the means to transmit, receive, and display selected code replies. [1.1]

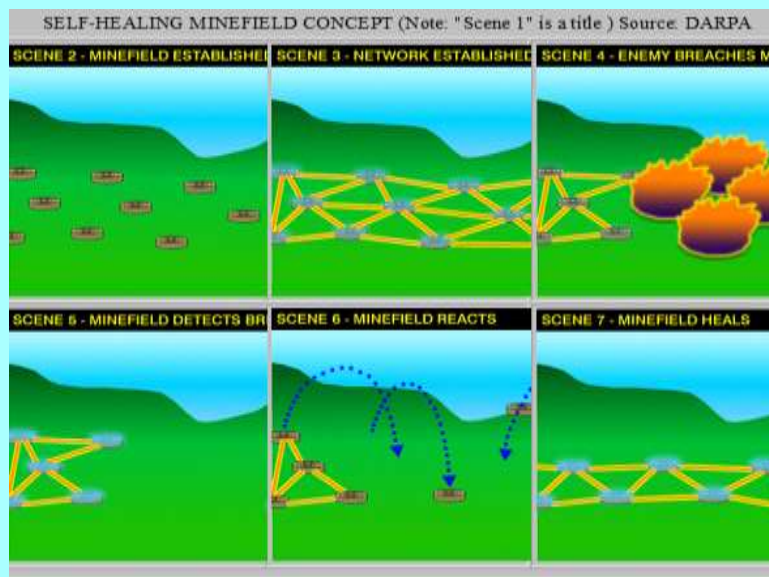
SELECTIVE LASER SINTERING (SLS) - A process that converts heat-fusible powders into solid objects through the external application of optical (laser) energy. [10:123] See also STEREO LITHOGRAPHY.

SELF-ASSEMBLY - A manufacturing process for NANOPHASE MATERIAL that exploits the inherent tendency of molecules and molecular clusters to interact and organize themselves into larger-scale structures. [10:2834] NOTE: Self-assembly is a rapid process because molecules naturally arrange themselves in seconds or minutes.

SELF-FORGING FRAGMENT (SFF) - Any of explosively formed penetrator (EFP) warheads that penetrate an armored vehicle, say through the bottom (*e.g.*, from a tank mine). After penetrating the bottom of the vehicle hull, a kinetic-energy slug creates spalling effects that can ignite ammunition and fuel, or a number of submunitions are fired at short intervals (*e.g.*, 5 ms). These devices generate overpressure within sealed vehicles, amplifying injuries to personnel. []

SELF-HEALING MATERIALS - See AUTONOMIC HEALING

SELF-HEALING MINEFIELD - A minefield designed to resist breaching. It reacts to breaching attempts by reorganizing itself to cover the breach by automatic relocation of the mines (*i.e.*, the mines move themselves to cover the breached area). [10:2955] See also SELF-REPOSITIONING MINE.



SELF-PROTECTION - A mission area in which electronic warfare systems provide platform self-protection through active transmission or reflection of electromagnetic energy or destruction of enemy command, control, and communications or weapons systems. [] See also **MISSION SUPPORT**, **THREAT WARNING**.

SELF-PROTECTION ESM/ECM - ESM/ECM performed by a platform to protect itself against hostile terminal threat weaponry. Contrast with **TACTICAL SUPPORT ESM/ECM**. [] See also **COUNTER-HOMING** and **COUNTER-FUZING**.

SELF-REPOSITIONING MINE - A land mine that has an awareness of the battlefield and the status of other (self-repositioning) mines via a simple "intranet". If one region is cleared of mines, others nearby would move quickly into place to reconstruct the field. One mine repositioning approach involves a small piston on the underside of each mine. An explosive charge or other device drives the piston out to propel or hop the mine in a certain direction. Another approach is to equip the mines with small treads or crawlers to provide mobility. [10:2690] See also **SELF-HEALING MINEFIELD**.

SELF-SCREENING ECM - An ECM technique used by a potential target to protect itself against external electronic systems, such as those carried by missiles or weapons systems. []

SEMANTIC ATTACK - A form of **HACKING** in which the perpetrator provides bad or false data to the system under attack in such a way that the victim will not be able to detect the intrusion. [10:2878] NOTE: An example of semantic attack is the providing false data about the existence of an earthquake, to a system which is programmed to shut down during an earthquake. In the commercial world, example semantic attacks include feeding false claims to a claims processor; false loan information to banking systems; etc.

SEMI-ACTIVE HOMING GUIDANCE - A system of **HOMING GUIDANCE** wherein the receiver in the missile utilizes radiation from the target which has been illuminated by an outside source. [1.1]

SEMIAUTOMATED IMAGERY INTELLIGENCE PROCESSING (SAIP) - A system of integrated **IMAGERY INTELLIGENCE (IMINT)** exploitation software tools and associated hardware designed to pre-process imagery from airborne platforms and CUE image analysts to potentially exploitable events. SAIP provides the tools needed to rapidly and accurately analyze high volume **SURVEILLANCE IMAGERY**, and permits the rapid generation of reports and image products in support of the warfighter. [NAVWAR Joint Warfighting Science and Technology Plan (*circa* 2000)] NOTE: SAIP brings together template-based **SYNTHETIC-APERTURE RADAR (SAR)** **AUTONOMOUS TARGET RECOGNITION**, cluster analysis, object-level change

detection, interactive target recognition, ELECTRO-OPTIC (EO) and SAR site monitoring, and force structure analysis to provide commanders with greatly improved SITUATIONAL AWARENESS (SA).

SEMICONDUCTOR BRIDGE (SCB) INITIATOR - A timing device used to ignite low-voltage explosive devices. It produces a low-energy pulse which causes a doped region on a polysilicon substrate to burst into a bright plasma. This plasma discharge causes an ignition which produces an explosive output within microseconds, depending on the material used and the initiator geometry. [10:2649]

SENSITIVE COMPARTMENTED INFORMATION (SCI) - Security controls over and above the usual security classifications (*e.g.*, Confidential, Secret, Top Secret). SCI information (and material) bear special community controls indicating restricted handling within present and future community intelligence collection programs and their end products for which community systems of compartmentation have been or will be formally established. [] NOTE: Designations of SCI compartments, such as UMBRA (particularly sensitive communications intelligence), RUFF (intelligence based on satellite imagery), and BYEMAN (a control system to protect information related to NRO collection systems - as opposed to their products - , budget, structure, etc..., were once classified themselves.

SENSITIVE RADAR - A radar capable of detecting LOW OBSERVABLE targets. [10:89] EXAMPLES: BISTATIC, OTH, WIDEBAND RADAR; LADAR.

SENSITIVITY - See RECEIVER SENSITIVITY.

SENSOR - (1) An equipment which detects, and may indicate, and/or record objects and activities by means of energy or particles emitted, reflected, or modified by objects. [1.1] (2) A device that responds to physical stimulus and produces a resulting signal. [3]

SENSORCRAFT - An unmanned combat aerial vehicle (UCAV) designed around its sensor suites. Its configuration is such that no part of the aircraft obstructs the sensors' field of view (FOV). [10:2864]

SENSOR-FUZED WEAPON (SFW) - A weapon designed to attack multiple targets (*e.g.*, armored vehicles) in a single pass, in all weather, day or night, from altitudes ranging from 200 to 20,000 feet. The SFW dispenser houses ten bombs, each with four target-sensing submunitions with a built-in INFRARED sensor that searches for a target matching a designated set of IR characteristics, and fires an explosively-formed projectile at the qualifying target. [10:2908] See also SKEET.

SENSOR SEEDING - The dropping (by an aircraft, for example) of a number of small battery-powered sensing devices (perhaps the size of a golf ball). Each device is made to blend into its surroundings, and contains acoustic, motion, light, and full-spectrum radio frequency sensors, as well as GPS (to determine the exact location when they land). The devices would detect gunfire, flashes, radio communications, etc.. and report sensed data to the monitoring activity. [] NOTE: Such seeds could be dropped in a line to form a security "fence" to detect individual "foot tripping" of border and secured zones.

SENTIENT - A descriptor for a **BRILLIANT MUNITION** that is aware of itself and its surroundings. [12]

SENTIENT MUNITION - A type of "brilliant" munition that is aware of itself and its surroundings; for example, a brilliant munition that responds to its environment, or communicates with others among the same payload or salvo to seek out the targets and maximize interception or destruction probability. Also called **CORRELATED MUNITION**.

SENTINEL - A network intrusion detection system that searches for the characteristics of attacks to predict security problems and monitor network activities. The system is able to identify attacks that have similar characteristics as previous threats and detect new ones through its "learned" intelligence. [10:2667]

SEQUENTIAL LOBING - See **LOBE SWITCHING**.

SERRODYNE JAMMING - A method of "pulling off" the velocity gate of a Doppler radar by using a voltage- controlled phase shifter, usually a **TRAVELING WAVE TUBE (TWT)**. This introduces a frequency shift that pulls the Doppler tracking gate away from the **SKIN ECHO**. [4:1]

SERVER - A computer that provides a service for other computers connected to it via a network. [] NOTE: A *file server* consists of a computer and associated hardware and software that provides file-handling and storage functions for multiple users on a network.

SESSION COOKIE - A **COOKIE** that expires as soon as you log out, or a short time thereafter as set by the web site. Contrast with **PERSISTENT COOKIE**.

SET BEAM HIGH INTENSITY HAND-HELD SEARCHLIGHT SYSTEM - A **NONLETHAL WEAPON** which generates six million candles of light power with an effective range at high strobing level of 100 yards. [10:2745]

SET-ON RECEIVER - A receiver/jammer designed to automatically detect, prioritize, and jam multiple frequencies simultaneously on a time-shared basis. [10:57*]

SHALLOW-WATER ASSAULT BREACHING SYSTEM (SABRE) - A single-rocket-deployed demolition line-charge system, used primarily to clear mines in the surf zone, that is effective in water depths between three and 10 feet. [10:2790] Compare with DISTRIBUTIVE EXPLOSIVE TECHNOLOGY (DET). See also AIRBORNE MINE-NEUTRALIZATION SYSTEM (AMNS), RAPID AIRBORNE MINE-CLEARANCE SYSTEM (RAMICS), and SHALLOW-WATER INFLUENCE MINE SWEEP (SWIMS) SYSTEM.

SHALLOW WATER INFLUENCE MINE SWEEP (SWIMS) SYSTEM - A self-contained system designed to carry out high-speed magnetic or magnetic/acoustic influence mine-sweeping missions in shallow waters. The system consists of a towed magnetic and acoustic source, a tow/power delivery cable, a power conditioning-and-control subsystem, and an external or palletized power supply. It is capable of being towed at speeds up to 40 knots, which provides for a large area-coverage rate. [10:2792] See also AIRBORNE MINE-NEUTRALIZATION SYSTEM (AMNS), DISTRIBUTIVE EXPLOSIVE TECHNOLOGY (DET), RAPID AIRBORNE MINE-CLEARANCE SYSTEM (RAMICS), and SHALLOW-WATER ASSAULT BREACHING (SABRE) SYSTEM.

SHAPE MEMORY ALLOYS (SMA) - Materials such as PIEZOELECTRIC materials, ELECTROSTRICTIVE ceramics and MAGNETOSTRICTIVE materials. [10:2604]

SHAPE-SHIFTING ANTENNA - An antenna which, after having been bent, twisted or deformed, returns to its original shape. Further, if the antenna is cut, it will retain its conductivity. [10:3116]

SHAPING - A method of radar cross section reduction. Shaping positions target surfaces and edges so that radar energy is reflected away from the radar. [10:37]

SHARED-APERTURE ANTENNA - An antenna utilizing an existing antenna structure for the transmission of two or more electromagnetic signals. [10:54] See also CONFORMAL ANTENNA, DOUBLY CONFORMAL ANTENNA, MICROSTRIP ANTENNA. NOTE: The sharing of the aperture may be accomplished by the incorporation of several feed devices or by the design of a broadband, dual-or-more-frequency radiation structure. Sharing an aperture provides the advantage of minimizing the number of discontinuities in the surface to the structure or platform.

SHIELDING - A barrier of attenuating material used to reduce radiation hazards. [3] Shielding involves surrounding a circuit with metal or coating its enclosure with metallic paint, and providing a low-resistance path to ground. [10:2541] See also **NUCLEAR ELECTROMAGNETIC PULSE COUNTERMEASURES (NEMPCM)**.

SHIP CONTROL SYSTEM (SCS) - A sub-system of the **INTEGRATED BRIDGE SYSTEM (IBS)** which provides command and control signals to ship control and propulsion systems and monitors the performance of these systems. []

SHOCK RADAR - See **IMPULSE RADAR**.

SHOE-HORN INSTALLATION - Reference to the cramming of new EW avionics systems into aircraft that had little or no room to spare, often forcing use of pod-mounted devices. Shoe-horn installations generally cause EMC and RFI problems. [10:2677]

SHOOT-AND-SHOOT - A tactic in which a firing unit moves into position, fires at its target(s), then departs quickly for another site before the enemy can return fire. [] **NOTE:** SHOOT-AND-SHOOT tactics are often used by self-propelled howitzers which resemble tanks but are not designed to fight in fast-moving, close combat like tanks. This tactic is also used in air defense, complicating the **SUPPRESSION OF ENEMY AIR DEFENSE (SEAD)** problem.

SHORAN - A precise short-range electronic navigation system which uses the time of travel of pulse-type transmission from two or more fixed stations to measure slant-range distance from the stations. Also, in conjunction with a suitable computer, used in precision bombing. (This term is derived from the words "SHort RAnge Navigation.") [1.1]

SHORT PULSING - An ECCM technique used by radars. The transmitted pulse is less than the expected turnaround time of the repeater jammer. [8]

SHORT-RANGE UNMANNED AERIAL VEHICLE (SRUAV) - The SRUAV has a range of 150 km or more ahead of the forward line of troops (FLOT), and is used for reconnaissance and surveillance, target spotting, EW, nuclear, biological and chemical (NBC) reconnaissance, meteorology, and Command and Control (C²) missions. Designed with a cruising speed of less than 90 knots, the SRUAV has an endurance of 8-12 hours, and can carry sensors for day/night imaging, communications relay, **SIGNALS INTELLIGENCE (SIGINT)**, **MEASUREMENT AND SIGNATURE INTELLIGENCE (MASINT)**, target designating and EW. [10:2517] Contrast with **CLOSE-RANGE UNMANNED AERIAL VEHICLE (CRUAV)**. See also **IMAGERY**, **IMAGERY INTELLIGENCE**, **UNMANNED AIR VEHICLE (UAV)**.

SHORTSTOP - See **SHORTSTOP ELECTRONIC PROTECTION SYSTEM (SEPS)**.

SHORTSTOP ELECTRONIC PROTECTION SYSTEM (SEPS) - (1) A device which employs a passive detection system to automatically counter different types of proximity-fused artillery and mortar shells by emitting RF signals that prematurely detonate detected fuses several meters above the ground, outside of their effective range. [10:2581] (2) Electronic parasols that detect and prematurely detonate munitions during flight to render them harmless. [10:2641] See also **ACTIVE ARMOR**.

SHROUDING BMD COUNTERMEASURES - High-altitude **STEALTH TECHNIQUES** to reduce the re-entry vehicle **RADAR CROSS SECTION**, or to hide a warhead in a **CHAFF** cloud, or to create multiple clouds of **CHAFF**, some containing warheads. An alternative approach is that of infrared stealth -- making the warhead invisible to heat-seeking homing sensors by, for example, cooling it with liquid nitrogen. [10:2609] See also **EVASIVE MANEUVERS BMD COUNTERMEASURES**, **FALSE-TARGET BMD COUNTERMEASURES**, **SUBMUNITION BMD COUNTERMEASURES**, **TRAJECTORY BMD COUNTERMEASURES**.

SHUTTER CONTROL - The ability to block earth imaging systems from observing specified geographic areas. [10:2772]

SIDE LOBE - A radiation **LOBE** in any direction other than that of the **MAJOR LOBE**. [3] See also **BACK LOBE**, **MINOR LOBE**.

SIDE LOBE CANCELING - An **ECCM** technique to counter high-power noise jammers. It uses an additional 20 dB of electronic canceling above that which is provided by the basic low **SIDE LOBE** design. [10:2446]

SIDE-LOOKING AIRBORNE RADAR (SLAR) - (1) An airborne radar, viewing at right angles to the axis of the vehicle, which produces a presentation of terrain or moving targets. [1.1] (2) A surveillance radar that illuminates two narrow swaths that generally run at right angles to the line of flight, one on each side of the aircraft. [10:15] **NOTE**: The forward motion of the aircraft sweeps the swaths over the terrain, producing an image that resembles an aerial photograph in perspective. The **SLAR** image, however, differs from an aerial photograph since the **SLAR** has larger coverage but poorer resolution. The **SLAR** image is unimpeded by cloud cover, rain and dust, which often reduce the effectiveness of aerial photography.

SIGINT - See **SIGNALS INTELLIGENCE**.

SIGNAL - (1) Any transmitted electrical impulse. [1.1] (2) A distinctive energy impulse transmitted within the **ELECTROMAGNETIC SPECTRUM** which possesses useful characteristics. [] Contrast with **NOISE**. NOTE: A **SIGNAL** for one system may concurrently represent **NOISE** to another system.

SIGNAL COMPROMISE REDUCTION - Techniques to prevent the interception of a signal, or to allow reception of a signal by deny interpretation of the modulation. Techniques to prevent interception include:

- Permit no stray radiation (e.g., ducted transmission by cables, waveguides, optical fibers,...);
- Minimize stray radiation (e.g., controlled beam width using laser systems, antenna patterns with **SIDELobe CANCELLATION** or **NULL STEERING**, exploiting propagation losses with **MILLIMETER WAVE (MMW)** systems);
- Make detection difficult (e.g., burst-mode communications, **FREQUENCY HOPPING**, **SPREAD SPECTRUM**).

Techniques which allow detection but deny interpretation involve cryptology.

SIGNALS INTELLIGENCE (SIGINT) - A category of intelligence information comprising either individually or in combination all **COMMUNICATIONS INTELLIGENCE**, **ELECTRONICS INTELLIGENCE**, and **FOREIGN INSTRUMENTATION AND SIGNALS INTELLIGENCE**. [1.1] See also **MEASUREMENT AND SIGNATURE INTELLIGENCE (MASINT)**. NOTE: **SIGINT** signals include the following:

| <i>SIGINT Signals</i> | |
|------------------------------|--|
| Radar | Pulsed RF; Stacked Beam; Log Swept |
| Communications | Frequency Shift Keying (FSK); Modem Signals; Machine-to-Machine Interchanges |
| Sonar | Passive; Active; Higher Frequency Mine Detection Applications |

SIGNALS MANAGEMENT - A SPACE AND ELECTRONIC WARFARE (SEW) warfare support discipline that encompasses measures to protect force signals and includes signals security, communications security, computer security, transmission security, and emission control management. [10:2505]

SIGNALS SECURITY (SIGSEC) - A generic term that includes both **COMMUNICATIONS SECURITY** and **ELECTRONICS SECURITY**. [1.1]

SIGNAL-TO-JAMMING RATIO (SJR or S/J) - The ratio of the desired signal level to the jamming signal level in the signal's **BANDWIDTH**. [8]

SIGNAL-TO-NOISE RATIO (SNR or S/N) - (1) The ratio of the amplitude of the desired signal to the amplitude of noise signals at a given point in time. [1.1] (2) The ratio of the value of the signal to that of the noise. [3] **NOTE:** This ratio is usually in terms of peak values in the case of impulse noise and in terms of the root-mean-square values in the case of random noise.

SIGNATURE - (1) An **OBSERVABLE** which permits identification of the generating object. See also **SPECTRAL SIGNATURE**. (2) A characteristic feature of a **VIRUS**. []

SIGNATURE CONTRIBUTOR - A source of **SIGNATURE TRANSIENT** of a vehicle or aircraft. []

SIGNATURE CONTROL - The manipulation of a platform's emission and physical characteristics, such as radar cross section, infrared modulation, radar pulse repetition rate, etc. in order to reduce an adversary's ability to detect, track, and engage friendly units during combat operations. [] Synonymous with **SIGNATURE MANAGEMENT** and **LOW OBSERVABLES**. **NOTE:** **SIGNATURE CONTROL** may be partitioned into the following: **ACOUSTICS SIGNATURE CONTROL**, **INFRARED SIGNATURE CONTROL**, **LASER SIGNATURE CONTROL**, **MAGNETIC SIGNATURE CONTROL**, **MULTISPECTRAL SIGNATURE CONTROL**, **OPTICAL SIGNATURE CONTROL**, **RADIO FREQUENCY (RF) SIGNATURE CONTROL**, and **WAKE SIGNATURE CONTROL**. [12]

SIGNATURE DETECTION - A type of **INTRUSION DETECTION** that recognizes a **HACKER** attack on the basis of known attack characteristics or signatures; also called **ATTACK DETECTION**. [10:2853] Contrast with **ANOMALY DETECTION**. See also **HOST-BASED INTRUSION DETECTION**, **NETWORK-BASED INTRUSION DETECTION**, **PORT SCAN**.

SIGNATURE MANAGEMENT - See **SIGNATURE CONTROL**.

SILENT ATTACK WARNING SYSTEM (SAWS) - A passive infrared, wide-angle missile warning system to provide long-range, multispectral hemispherical warning of launches and trajectories of surface-to-air and air-to-air missiles. [10:26] **NOTE:** A "second generation" SAWS is being developed, which uses **MULTICOLOR SPECTRAL** and

track processing algorithms to detect threats in high background clutter environment, while limiting false alarms to less than 1 per hour. [10:85]

SILENT GRIDLOCK - Establishing a GRIDLOCK by passive means only. []

SILENT RADAR - A radar that operates on the principle of frequency modulated continuous wave (FMCW) and is virtually undetectable by ESM by virtue of its very low radiated power and absence of pulses. [10:60] See also **LOW PROBABILITY OF INTERCEPT (LPI) RADAR**. NOTE: The power output of a silent radar is only a few watts vs. the tens of thousands of watts of peak power generated by conventional pulsed power radars.

SILENT SOUND DEVICE - A **NONLETHAL WEAPON** consisting of a device which can transmit ultrasound signals which are understood by the brain but not detectable by the human ear. [] See also **ACOUSTIC WEAPON**. Compare with **NEURO-ELECTROMAGNETIC DEVICE**.

SILICON ON INSULATOR (SOI) - A layered structure consisting of a relatively thin stratum of silicon -- from 50 nm to 100 μm , depending on the application -- in which circuitry is fabricated, separated from a supporting semiconductor substrate (typically silicon) by an insulating layer of silicon dioxide 80 nm to 1 μm thick. [10:2603]

SIMULATION PROGRAM with INTEGRATED CIRCUIT EMPHASIS (SPICE) - A circuit network simulation program. [10:2633]

SIMULATIVE COMMUNICATION DECEPTION - That type of **COMMUNICATION DECEPTION** that consists of actions to simulate friendly, notional, or actual capabilities to mislead hostile forces. [Adapted from the definition of **SIMULATIVE ELECTROMAGNETIC DECEPTION** defined in 7:CJCS MOP 6; APPENDIX B]

SIMULATIVE ELECTROMAGNETIC DECEPTION - That type of **ELECTROMAGNETIC DECEPTION** that consists of actions to simulate friendly, notional, or actual capabilities to mislead hostile forces. [7:CJCS MOP 6; APPENDIX B]

SIMULATIVE ELECTRONIC DECEPTION - Actions to represent friendly notional or actual capabilities to mislead hostile forces. [1.1]

SIMULTANEOUS LOBING - See **MONOPULSE**.

SINGLE STATION LOCATION - The geographic position fixing of an emission source from a single detecting site. []

SINUOUS COURSE CLOCK - A mechanical device positioned near the helm on the bridge of a ship. The device is associated with a number of cams of various shapes. When one of these cams is inserted in the sinuous course clock, it will rotate at a fixed rate, causing a pointer to move over a gyroscope repeater. The helmsman then adjusts the ship's rudder to maintain the position of the sinuous course clock's pointer at a fixed azimuth. [] See also **ZIG-ZAG COURSE**. **NOTE:** Use of the sinuous course clock causes the ship to vary its course continuously along a base course, thus making it difficult for a tracking submarine to compute a torpedo solution. In a multi-ship formation, the clocks are synchronized so that all ships maneuver together to maintain relative formation positions.

SITUATIONAL AWARENESS (SA) - Knowledge of one's status relative to the threat in a tactical environment. []

SITUATIONAL AWARENESS BEACON WITH REPLY (SABER) - A system which allows tactical commanders and shipborne and airborne platforms to locate and identify friendly forces. It can opt for either line-of-sight connectivity or satellite communications links enabling over-the-horizon operations. SABER taps the **GLOBAL POSITIONING SYSTEM (GPS)** for location data on each of its platforms. A miniature beacon package broadcasts location information as well as platform identifier data to SABER terminals. Since beacon traffic is two-way, the commander can tailor the position query rate to support operational needs. [10:2591] **NOTE:** Equipped with SABER, attacking aircraft sent into a battlespace can query the ground below to determine if any friendly forces are in the vicinity of their targets. Data from SABER-equipped units can be merged with other situational awareness systems such as the Army's enhanced position location reporting system (EPLRS).

SITUATION AWARENESS FROM ENHANCED THREAT INFORMATION (SAFETI) - The real-time fusion of **SYNTHETIC APERTURE RADAR (SAR)** and **SIGNALS INTELLIGENCE (SIGINT)** data to provide enhanced intelligence products for precision targeting and target identification. [10:2637]

SKAT SHELL - A **NONLETHAL WEAPON** shell capable of dispersing continuous tear smoke for crowd control. It releases multiple individual burning projectiles from a single cartridge. Each projectile burns for 30 seconds. Its effective range is more than 130 meters. []

SKEET - A warhead which may be a component of a submunition. One type of parachute-deployed submunition (BLU-108/B SFW) carries four skeet warheads which are detached in pairs from the spinning submunition cylinder (flipped away like a trapshooting skeet) when the submunition is aligned over the target area. Each skeet carries an **INFRARED (IR)** sensor and a warhead. When the skeet's IR sensor identifies a target it fires a wadded-up copper plate through the armor, sending splinters throughout the interior. [10:2927] See also **SENSOR-FUZED WEAPON**

(SFW). NOTES: (1) Because of the nature of the skeet charge, REACTIVE ARMOR (RA) is ineffective against it. (2) If a skeet doesn't find a target after a specified length of time, it will explode into fragments as a harassment measure and to prevent it from becoming hazardous unexploded ordnance (UXO).

SKIN ECHO - See SKIN PAINT.

SKIN PAINT - A radar indication caused by the reflected radar signal from an object. [1.1]

SKIN RETURN - See SKIN PAINT.

SKIN TRACKING - The tracking of an object by means of a skin paint. [1.1]

SKIRT JAMMING - JAMMING a MONOPULSE radar at frequencies on the skirts of the response curve of the radar. [4:19] NOTE: The skirts of a frequency response curve are the ranges of frequencies above and below the intended frequency of radar reception, but within the detection range of the receiver.

SKY WAVE - A radio wave propagated toward, and returning from, an IONOSPHERE. [3] Contrast with GROUND WAVE

SLAG CODE - See LOGIC BOMB.

SLANT DISTANCE - (1) The distance between two points that are not at the same elevation. Used in contrast to ground distance. [3] (2) The line of sight distance between two points, nor at the same level relative to a specific distance. [1.1] Synonymous with SLANT RANGE.

SLANT RANGE - See SLANT DISTANCE.

SLEEP AGENT - See CALMATIVE AGENT.

SLEEPER WEAPON - A weapon clandestinely positioned deep in enemy territory to be activated and employed when a threat emerges or a target to be neutralized comes within its range. []

SLID - Acronym for SMALL LOW-COST INTERCEPTOR DEVICE, a FOCAL PLANE ARRAY INFRARED sensor-based TERMINAL DEFENSE system intended to kill incoming anti-armor missiles, and artillery and mortar rounds. The interceptor device is a ROLLING AIRFRAME MISSILE (RAM), approximately 21 inches long and 4 inches in diameter that incorporates impulse divert thrusters (i.e., positioning jets) for lateral maneuvering. The threat warning system, operating in the MID-

INFRARED wavelength, detects and hands over the target to the mid-infrared narrow FIELD-OF-VIEW (FOV) tracking system to place the crosshairs of the sight on the incoming weapon. Once the tracker acquires the threat, a bore-sighted LASER DESIGNATOR illuminates the target, and the interceptor missile is launched. The interceptor carries a LASER SEEKER in its nose to home on the designator's energy. [10:2583]

SLOCUM-GLIDER - An AUTONOMOUS UNDERWATER VEHICLE (AUV) which is powered by different temperature layers in the ocean. The Slocum Glider employs a heat engine that draws energy from the ocean thermocline (an ocean layer where the temperature changes rapidly with a small change in depth), the result being that by cycling indefinitely between the surface and a programmed depth, it can get the energy needed to change its buoyancy from the temperature of the surrounding water. The Slocum Glider can be used to collect high-resolution profiles of physical, chemical and bio-optical properties of the ocean. (*e.g.*, measure salinity and temperature, plot currents and eddies, count microscopic plants, and record sounds such as whale songs). [10:2975]

SLOT BUOY - See SUBMARINE LAUNCHED ONE-WAY TRANSMISSION (SLOT) BUOY.

SLOW WALKER - A military space mission, originally to detect and track aircraft afterburner emissions, then evolving to that of real-time detection of first-stage missile exhausts. [10:2509] See also FAST WALKER, JOGGER.

SMALL AEROSTAT SURVEILLANCE SYSTEM (SASS) - An AEROSTAT mounted radar. The balloon is held in position by cables that come down to ground-based moorings. A umbilical cord is used to provide power to the radar and convey radar display data to the ground. [10:25]

SMALL CRAFT ADVANCED TACTICAL RADAR (SCATR) - An Inverse Synthetic Aperture Radar (ISAR) which creates a three-dimensional image of a target. This is done in real time to create a series of radar frames as the target moves in three dimensions. SCATR employs a software-based NEURAL NETWORK analysis system to identify major structural components and generate approximate line drawings to match the radar-generated silhouette. [10:2787]

SMALL DIAMETER BOMB (SDB) - A Precision-Guided Munition (PGM) of smaller diameter than conventional bombs, thus enabling fighters and bombers to carry more bombs and attack more targets with fewer planes. [Govcon.com News - 10/01] Also called SMALL SMART BOMB (SSB). See also SWING WING ADAPTER KIT (SWAK). NOTES: (1) The small diameter bomb is a Small Bomb System

(SBS) and part of the Miniature Munition Capability Program. (2) The SDB has been (2005) launched from 30,000 feet to strike within 34 inches of a target 55 miles away. [10:3059]

SMALL LOW-COST INTERCEPTOR DEVICE - See **SLID**.

SMALL PAYLOAD ORBIT TRANSFER VEHICLE (SPORT). An upper stage vehicle designed to deliver a payload from **GEOSYNCHRONOUS TRANSFER ORBIT (GTO)** to low Earth orbit (**LEO**) by means of a deployed aerobrake. []

SMALL SMART BOMB (SSB) - See **SMALL DIAMETER BOMB (SDB)**.

SMALL UNIT RIVERINE CRAFT (SURC) - A small rigid-hull craft designed to provide tactical waterborne lift for conventional military operations in a riverine environment. The SURC is designed to carry up to 18 combat-loaded Marines, plus a crew of two, and remain afloat as a survival platform even when filled with water. Powered by a hull propulsion system, the SURC has a draft of 24 inches and can maintain an average speed of 30-35 knots. It is capable of beaching bow-first on unobstructed shoreline with mud, sand, silt or gravel surfaces at one-quarter cruising speed. It can be fitted with multiple gun mounts for both medium and heavy machine guns. It can be lifted by a heavy-lift helicopter and will be C-130 transportable with its organic trailer. [10:2912]

SMALL UNIT SOLAR SHADE (SUSS) -- A family of one, two, and four-man **CAMOUFLAGED** solar cover tents used by forward reconnaissance forces, special forces, and laser targeting teams that reduces both near-**INFRARED** and thermal signature while providing protection from temperature extremes that occur during day and night operations. [Natick Soldier Center (NSC) (A large number of fact sheets are available (August 2004) from the Natick Soldier Center at the following Web site: <http://www.natick.army.mil/>)] **NOTE:** The use of SUSS is expected to reduced heat stress, thus enhancing a team's performance, and cutting down on the team's water consumption needs.

SMART AIRCREW INTEGRATED LIFE SUPPORT SYSTEM (SAILSS) - A system designed to monitor the pilot's physiological data (e.g., pulse and breathing rates, oxygen flow, brain wave and muscle activity) via sensors embedded in undergarments and the helmet. These data are used to adjust the life support equipment, including the antigravity, or "G", suit, and the normal and positive pressure-breathing oxygen systems for the G-force and flight altitude that the aircraft is experiencing. [10:2696]

SMART AMMUNITION - A generic classification. Smart ammunition requires target designation by an auxiliary system either external or internal to the munition/ missile or delivery system. [10:19] Contrast with **BRILLIANT AMMUNITION**, **DUMB**

AMMUNITION. NOTE: Examples of smart ammunition are laser beam riders and missiles which home in on laser designation or radar designation.

SMART ARMOR - A form of ACTIVE ARMOR which uses sensors to detect a round as it hits and then determine its critical parameters. Embedded microprocessors then initiate the appropriate charge-momentum transfer to blunt the effectiveness of the incoming penetrator round or raises bars to break up the penetrator. [10:2719] See also ELECTROMAGNETIC ARMOR, REACTIVE ARMOR.

SMART BULLET - See BARREL-LAUNCHED ADAPTIVE MUNITION (BLAM).

SMART CHAFF - CHAFF which is enhanced by external radiation or cross-section modulation. See also PASSIVE EXPENDABLES. [10:77]

SMART CARD - A credit-card sized plastic card having an embedded semiconductor containing user information. The smart card employs an embedded read/write device that can decipher data within the card and add to that data by reading and storing data as the card is being used. Also called INTEGRATED CIRCUIT CARD. [10:2479] See also MEMORY CARD, MICROPROCESSOR CARD.

SMART DUST - A collection of MICROELECTROMECHANICAL SYSTEMS (MEMS) wired up to form a simple computer contained in a "mote", light enough to remain suspended in air (like dust), buoyed by the currents. Each mote contains a solar-powered thick film battery, a GPS receiver and various sensors and is able to communicate with other motes and control stations using optical transceivers. [10:2907] Also called DIGITAL DUST. NOTE: Smart dust has potential for use in locations which are hazardous to humans, including space and hostile military areas.

SMART FASTENER - An electromechanical device which allows access to maintenance panels and equipment without the use of tools. [10:3082] Also called INTELLIGENT FASTENER. NOTE: Sensors embedded in the fasteners permit the monitoring of electronics cabinets with remote lock-unlock capability and other parameters such as stress, movement, acceleration or the presence of certain gases.

SMART FLUID - A fluid which will instantly turn solid with no change in temperature when an electric current is passed through it, and which will again liquefy when the current is removed. [10:44]

SMART GRID - A network of electrical transmission systems incorporating existing systems with new and emerging technologies, such as the wireless Internet and networked home appliances, smart meters and electric car charging systems. The National Institute of Standards and Technology (NIST) Smart Grid Interoperability

Panel working with organizations in industry and others have created (ca 2011) the following Priority Action Plan (PAP) categories for developing consistent operation of the Smart Grid nationwide. [10:3109]

| SMART GRID # PRIORITY ACTION PLAN | |
|--|--|
| 0 | Meter Upgradeability Standard |
| 1 | Role of Internet Protocol (IP) in the Smart Grid |
| 2 | Wireless Communications for the Smart Grid |
| 3 | Common Price Communication Model |
| 4 | Common Schedule Communication Mechanism |
| 5 | Standard Meter Data Profiles |
| 6 | Common Semantic Model for Meter Data Tables |
| 7 | Electric Storage Interconnection Guidelines |
| 8 | CIM for Distribution Grid Management |
| 9 | Standard DR and DER Signals |
| 10 | Standard Energy Usage Information |
| 11 | Common Object Models for Electric Transportation |
| 12 | Mapping IEEE 1815 (DNP3) to IEC 61850 Objects |
| 13 | Harmonization of IEEE C37.118 with |

| | |
|--|---|
| | IEC 61850 and Precision Time Synchronization |
| 14 | Transmission and Distribution Power Systems Model Mapping |
| 15 | Harmonize Power Line Carrier Standards for Appliance Communications in the Home |
| 16 | Wind Plant Communications |
| 17 | Facility Smart Grid Information Standard |
| 18 | Smart Energy (SEP) Profile 1.X to 2.0 Transition |
| <p style="text-align: center;">Visit http://nist.gov/smartgrid/priority-actions.cfm to view additional information for each PAP</p> | |

SMART JAMMER - A JAMMER having extensive signal-analysis capability to provide for efficient use of jamming resources. [5:7] NOTE: A smart jammer features accurate frequency measurement, precise direction-of-arrival information, breaking of spread spectrum codes, nearly instantaneous following of frequency hopping patterns, determination of modulation types, encryption techniques, data format, diversity technique and combining method, and knowledge of any multiple access scheme used by the target radar.

SMART MARKER - A nuclear/Biological/Chemical (NBC) hazard sensor which may be delivered or implanted as a "stay-behind" or "remotely-emplaced" to detect and monitor NBC hazards in areas of interest. The GPS-carrying marker would be fitted with INFRARED (IR) and visual beacon strobe, a digital storage/retrieval module, and perhaps an anti-tampering device. [*U.S. Army Concept Experimentation Program #0301, 12/10/1999*]

SMART MATERIALS - See SMART STRUCTURES.

SMART MATTER - See SMART STRUCTURES.

SMART METALS - Special metals, formed with chemical additives or blended in a particular form, used to control certain activities while allowing legitimate ones. For example, a metal designed to perform satisfactorily in a legitimate chemical plant might be designed to fail or emit tell-tale signs to inspectors if the plant is used for other purposes. [10:2754]

SMART MINE - A mine which self-destructs after a preset period of time. []
Contrast with **DUMB MINE**.

SMART MUNITION - A "many-on-many" munition with a minimal target selection capability that does not require an operator in the loop. [12] Contrast with **BRILLIANT MUNITION** and **GUIDED MUNITION**. NOTE: There are two prime categories of **SMART MUNITIONS**: terminally guided ("hit-to-kill") and sensor fuzed ("shoot-to-kill").

SMART NETWORK - A deployable cell-phone based system which provides communications which bypass vulnerable links to satellite ground stations. The (2-man) portable equipment can form self-healing tactical networks that connect automatically to other nodes and to satellite or landline systems. [10:3066] NOTE: The Smart Network employs 3rd-generation cellular waveforms that feature live streaming video, reduced latency and increased bandwidth and security.

SMART OPTICS - Gradient refractive index (**GRIN**) material used to bend, join, divide, direct and guide light beams in a predictable, integrated manner. [10:89]

SMART POWER SUPPLY - An ECM system power supply which matches the output power to the requirements of the incoming threat. []

SMART RADIO - A radio system that actively senses the **ELECTROMAGNETIC ENVIRONMENT** and uses free, unassigned portions of the **SPECTRUM** for message transmission. [10:3014] See also **SPECTRUM MANAGEMENT**.

SMART SENSOR - Sensors which merge electronic data processing with the sensing devices. See also **BIOMETRIC DEVICE**. [10:44] NOTE: **SMART SENSORS** include multisensors, which handle inputs from two or more sensors simultaneously, and vision-based sensors for positioning, inspection, and identification.

SMART SENSOR-FUZED WEAPON - A generic term for a **SMART WEAPON** class of munitions to exploit armor penetration techniques to overcome **ACTIVE ARMOR** and reactive armor. Such munitions can search for targets, and possess fragment generators to produce the number of fragments most effective against the type of target detected. These fragments can then be steered to the target. [10:2668]

SMART SKIN - A vehicle (e.g., aircraft) surface composed of various sensors embedded into composite material. [] See also **CONFORMAL ANTENNA**, **CONFORMAL AVIONICS**, **EMBEDDED AVIONICS**. NOTES: (1) Smart skin contains, in effect, a nervous system consisting of sensing systems, such as fiber-optic sensors, to monitor and measure vibrations, temperature, strain, chemical activity, impact energy, magnetic anomalies, acceleration, and acoustic emissions. In aircraft, smart skins provide real-time measurements and reports to aircraft crews of the aircraft structural integrity. (2) Do not confuse with "SmartSkin™," a new technology employed in divers wet suits that offers thermal protection in a wide range of environments by responding to both external and internal conditions. SmartSkin™ involves a hydrogel, a hydrophilic/hydrophobic copolymer embedded in an open-cell foam layer bonded to the inside of a closed-cell neoprene layer in a composite wet suit fabric with nylon or nylon/Lycra® outer and inner layers. SmartSkin™ absorbs cold water that has flushed into the suit and expands to close openings at the hands, feet and neck, preventing more water from entering. Water trapped inside the suit heats up upon body contact. If the water warms up past a transition temperature determined by the proportion of hydrophilic to hydrophobic components, the hydrogel releases water and contracts, allowing more water to flush through the suit. This passive system constantly regulates the internal temperature without the need for batteries or mechanical action. Source: Rodie, Janet Bealer, "Quality Fabric of the Month," *Textile World*, March 30, 2003 (textileworld.com).

SMART SLEEVE - A system of embedded sensors and active elements employed in torpedoes to reduce the noise caused by torpedo movement through the water, which can interfere with the weapon's sensors. The objective is the ability of a torpedo to cancel vibrations caused by boundary layer turbulence before they reach the torpedo's sonar sensor. [10:2798]

SMART STRUCTURES - Structures made of composite materials which can be programmed to deform as required to achieve certain aerodynamic, vibration, or acoustic characteristics. [10:2592*] Smart structures can sense external stimuli and respond with active controls in **REAL** or **NEAR-REAL TIME**. Typical smart structures, or materials, include **SHAPE MEMORY ALLOYS**. [10:2604] NOTE: Applications of **SMART STRUCTURES** (or **SMART MATTER**) include miniature air valves that can exert small changes in air flow (e.g., to move paper quickly in copiers) and microscopic tuning forks to perform jet engine diagnosis [10:2617]

SMART WATER - A type of **CODED FLUID**, *i.e.*, a **TAGGANT** painted onto the item to be protected. The liquid is uniquely coded with a combination of chemicals and no two solutions are the same. [] NOTE: When dry, SmartWater is virtually undetectable under normal lighting, but will glow under ultra-violet light.

SMART WEAPON - A weapon system which can automatically detect and classify its target and which can then automatically decide to attack it and execute the attack. [] See also **AUTONOMOUS TARGET RECOGNITION**.

SMART WIRE - A wire and cable testing system which continuously monitors the cable's health and corrects faults as they occur. One envisioned system would include a Frequency Domain Reflectometer (FDR), on-board processor, environmental sensor, and wireless communications system integrated into a single miniaturized unit, hundreds of which could be embedded in the wiring system (of an aircraft, for example). [10:2871] See also REFLECTOMETRY.

SMELL SEEKER - An electronic device which can provide guidance for a weapon to home in on the aroma or scent of a given target. [10:2751] NOTE: This relates to Air Force 2025 concept #900567 called "I Can Smell You".

SMOKELESS STUN GRENADE - A NONLETHAL WEAPON consisting of a grenade which produces a deafening blast, but with little smoke so that visibility of the user will not be impaired. [10:2745]

SMOKEY SAM - A simple and cheap Surface-to-Air Missile (SAM) simulation rocket used to provide a realistic visual SAM threat in air warfare exercises. Smokey Sam is actually launched at the "attacking" aircraft, and leaves a thick white trail of smoke (hence the name "smokey Sam). [*Naval Weapons Center announcement*] NOTE: Smokey Sam is supposedly harmless to, even if it collides with, the exercise aircraft because it is made of light easily-destructible material.

SNEAKERNET - A humorous reference to the method of data transfer between computers by which data are placed on a removable media (disk, tape, . . .) at the host computer, which are then removed and carried to another computer to be copied there. [] NOTE: *Sneaker* implies the notion that the operator would be putting on his or her sneakers in order to carry the media from the current station to its destination.

SNIFFER - A generic term for computer programs which allow individuals to gather information regarding the status of the components of a network system. [] See also PACKET SNIFFER.

SNIFFERSTAR - A small airborne sensor capable of detecting chemical or gas attacks. It consists of a series of miniature sensors on a platform roughly the size of a pat of butter. The platform is located atop a microprocessor board smaller than a credit card. The UNMANNED AERIAL VEHICLE's (UAV) flight forces air into the sensors where samples are concentrated. The sample material is thermally released over thin stripes of coating material on a quartz surface, which vibrates at pre-set frequencies when a small electric current is applied. Chemical agents will temporarily stick to the coating, changing the frequencies of each stripe. The data are then passed to a processing unit on the SNIFFERSTAR module and are relayed to a processor on the drone or to a ground-based processor. The data are compared against entries in a

library of known gas patterns. [] NOTE: The sampling process takes about 20 seconds - 15 seconds for sampling and five seconds for analysis. The incoming air then cleans the sensors in preparation for the subsequent reading.

SNIFFING - An ECCM technique used on tunable radars. The RF bandwidth for an ensuing series of radar transmissions is monitored to determine if jamming or interference is present in order to determine whether a successful radar transmission can be made at that frequency. [] See also **FREQUENCY AGILITY**.

SNIPER ACOUSTIC DETECTION SENSOR (SADS) - A real-time acoustic system to detect, identify and localize sniper firing at ranges to 3,000 feet. The system may be carried by a single soldier and yields bearing accuracy of 3° in azimuth and 10° in elevation. [10:2719]

SNIPER FACE VEIL - An accessory to the **GHILLIE SUIT**. It is a camouflaged mesh which employs a variety of dark, drab colors (*e.g.*, forest green, brown, sand), blending with the environment, yet allows the individual to see out of it. [] See also **DRAG BAG**, **BALACLAVA**.

SNOW - (1) In air intercept, a term meaning **SWEEP JAMMING**. [1.1] (2) In video display systems, noise that is uniformly distributed in a spotty or mottled fashion on a screen, such as a radar or television screen. The speckled background is caused by random noise on an intensity-modulated **CATHODE RAY TUBE (CRT)** display. [10:14] (3) The effect on a radio or radar screen that is caused by sweep jamming and that has a uniformly crosshatched or speckled appearance. [10:14]

SOFT INFORMATION - Information derived from unstructured data that It may be unreliable because of inconsistencies and duplication. [] NOTE: An example of soft information is a large bibliography extracted from a group of scientific papers, where, for example, citations to a single source may have been expressed differently (*e.g.*, the same author cited in one paper with last name, first name and in another paper with last name, first and middle initial), implying two or more sources.

SOFT KILL - (1) Temporary disruption of the victim's equipment in order to seriously compromise that system's operation in critical areas. (2) The rendering of a weapon harmless to its intended target through use of non-destructive EW techniques. [] NOTE: After a **SOFT KILL** with respect to a target, the weapon may yet pose a threat to some other potential target. Contrast with **FIRM KILL**, **HARD KILL**.

SOFT KILL WEAPON SYSTEM (SKWS) - A naval multi-purpose **DECOY** launcher system designed to handle various types of decoys that protect the unit against incoming missiles and torpedoes. **SKWS** uses an algorithm to optimally select the launch tube with the appropriate decoy to counter a sudden upcoming threat. []

SOFT RAG - A NONLETHAL WEAPON consisting of a rubber bullet fired from an M-16 assault rifle. It is designed to knock an individual to the ground upon impact. [10:2759]

SOFTCOPY - Digital imagery processed by computers for high resolution display on color monitors. []

SOFT ROBOT – A robot made of silicone that is able to walk and can change color to match its surrounding, similar to the capability of an octopus. It is also capable of changing its temperature. []

SOFTWARE - A set of computer programs, procedures and associated documentation concerned with the operation of a data processing system, e.g. compilers, library routines, manuals, circuit diagrams. [1.1]

SOFTWARE AGENT - See AGENT.

SOFTWARE ARCHITECTURE - The structure and relationships among the components of a computer program. The software architecture may also include the program's interface with its operational environment. [10:33] Synonymous with PROGRAM ARCHITECTURE. See also ARCHITECTURAL DESIGN.

SOFTWARE DEFINED RADIO (SDR) - A radio which provides SOFTWARE control of its functions, such as wide- or narrow-band operation, MODULATION techniques, security functions (such as FREQUENCY HOPPING), and other functions. []

SOFTWARE STORMING - A method based on the brainstorming problem- solving technique to rapidly produce software prototypes. [10:108]

SOLAR BLIND - The part of the spectrum (in the ultraviolet range) which is almost completely absorbed by the earth's ozone layer. []

SOLAR BLIND DETECTOR (SDB) - A detector that can detect within its designed range and is not overwhelmed by solar radiation. []

SOLAR ENERGY OPTICAL WEAPON (SEOW) - A constellation of space-based mirrors which allow solar radiation to be focused on specific ground, air, or space targets. [USAF 2025 Study] NOTE: The lethality of this system is limited due to optical diffusion; however, it may have potential for disruption or weather control.

SOLAR SUNRISE - A term assigned to a set of INFORMATION SECURITY (INFOSEC) incidents consisting of intrusion attempts into DoD computer and network systems using a multi-faceted, organized approach that targeted many U.S. services and scientific sites. [10:2763] See also MOONLIGHT MAZE.

SOLDIER INTEGRATED PROTECTIVE ENSEMBLE (SIPE) - A clothing and helmet system with microclimate control and enhanced sensory capabilities. [10:109]

SOLDIER-MACHINE INTERFACE (SMI) - Considerations, through systems analysis and psychophysiology of equipment designs and operational concepts, to insure that they are compatible with capabilities and limitations of operators and maintenance personnel. [] Synonymous with SOLDIER-MATERIEL INTERFACE, SOLDIER-MATERIEL INTERACTION.

SOLDIER-MATERIEL INTERACTION - See SOLDIER-MACHINE INTERFACE.

SOLDIER-MATERIEL INTERFACE - See SOLDIER-MACHINE INTERFACE.

SOLID-STATE HEAT-CAPACITY LASER (SSHCL) - A LASER weapon that destroys its target with pulses of laser energy. The laser heats up the target until it is destroyed. NOTES: (1) One application of SSHCL is mine clearing. The pulsing allows the laser to drill a hole into the soil where a land mine is buried, and its heating characteristics will detonate the mine. (2) A benefit of the pulsed laser is that it can overcome passive countermeasures such as reflective coatings. If the pulsed beam strikes a mortar shell that is coated with a reflective substance, for example, the 200 pps will vaporize that coating quickly and lay bare the substrate for heating and destruction by subsequent laser pulses. [10:3050]

SOLITON - A pulse with a certain ratio of intensity and width, whose shape is maintained by the balance of negative group dispersion and the self-phase modulation arising from the Kerr nonlinearity (*i.e.*, the change in a medium's index of refraction caused by intense optical radiation). In a transmission line, such as silicon dioxide glass optical fiber, solitons can propagate essentially without distortion over long distances. [10:129]

SONAR - A sonic device used primarily for the detection and location of underwater objects. (This term is derived from the words "SOund Navigation And Ranging"). [1.1]

SONATA - A SPACE AND ELECTRONIC WARFARE (SEW) collective term for the following three themes underlying SEW: WELTANSCHAUUNG, COPERNICUS ARCHITECTURE, and CROESUS STRATEGIES. [10:2505]

SONIC BULLET - A NONLETHAL ACOUSTIC WEAPON which propels packets of sonic energy toward the target. [10:2754] See also **ACOUSTIC BULLET**. NOTE: The Russians apparently have a portable device that can propel a 10-Hertz sonic packet the size of a baseball hundreds of yards.

SONIC SEARCH - See PHONETIC SEARCH ENGINE (PSE)

SONOBUOY - A sonar device used to detect submerged submarines which when activated relays information by radio. It may be active directional or non-directional, or it may be passive directional or nondirectional. [1.1]

SONOFUSION - The use of high-pressure acoustic waves to implode tiny bubbles in a liquid in order to produce fusion. [10:3057] NOTES: (1) (*ca* 2005) Tiny bubbles in a liquid, such as acetone, are produced by a neutron generator. A piezoelectric crystal repeatedly contracts and expands, creating pressure waves with the container (*e.g.*, a flask). The liquid pressure compresses the bubbles causing them to implode with great violence. (2) (*ca* 2006) Controversy exists as to whether this method has actually produced fusion [10:3072]

SOPSMAN - See SPACE OPERATIONS SCHEDULING & MANAGEMENT SYSTEM

SOUND NAVIGATION AND RANGING - See SONAR.

SOUND SURVEILLANCE SYSTEM (SOSUS) - An integrated system of hydrophones located on the ocean floor. [] NOTE: SOSUS is designed to detect acoustic emissions from passing submarines.

SOURCE-REGION ELECTROMAGNETIC PULSE (SREMP) - An intense gamma-ray pulse from a nuclear explosion. The SREMP strips electrons from air molecules. These electrons create a strong current in the air that induces a return current through the ground, local currents within military hardware, and magnetic fields. Subsequent gamma rays from the explosion pulse the magnetic field, producing strong local ELECTROMAGNETIC PULSES. [10:2647]

SOUTH BRIDGE - A circuit in a computer chip which connects the central processing unit (CPU) to the Integrated Drive Electronics (IDE) BUS, Universal System Bus (USB), "plug-n-play", keyboard controller, mouse controller, power management, etc.... [] Also called **SOUTHBRIDGE CHIP**. Contrast with **NORTH BRIDGE**.

SOVIET MASKIROVKA - See MASKIROVKA.

SPACE AND ELECTRONIC COMBAT (SEC) - Military action to seize control of that portion of the ELECTROMAGNETIC SPECTRUM required for achieving a military objective, while simultaneously denying the adversary use of whatever portion of the electromagnetic spectrum he might seek to employ to counter friendly forces. [] See also ELECTRONIC WARFARE, RADIO-ELECTRONIC BATTLE MANAGEMENT.

SPACE AND ELECTRONIC WARFARE (SEW) - The surveillance, neutralization or destruction of enemy targets and the enhancement of friendly force battle management through the integrated employment and exploitation of the electromagnetic spectrum and the medium of space. It encompasses all the measures that are employed to: (1) Coordinate, correlate, fuse and employ aggregate communications, surveillance, reconnaissance, data, correlation, classification, targeting, and electromagnetic attack capabilities; (2) Deny, deceive, disrupt, destroy or exploit the enemy's capability to communicate, surveil, reconnoiter, classify, target and attack; (3) Direct and control employment of friendly forces. [DoD presentation, 12/7/90] *Alternate definition:* (a) As warfare, the destruction or neutralization of enemy SEW targets. (b) As warfare support, the enhancement of friendly force battle management through the integrated employment and exploitation of the electromagnetic spectra and the medium of space. It encompasses measures that are employed to: Coordinate, correlate, fuse, and employ active and passive systems to optimize individual and aggregate communication, surveillance, reconnaissance, data correlation, classification, targeting and electromagnetic attack capabilities; Destroy, deny, degrade, confuse, or deceive the enemy's capabilities to communicate, sense, reconnoiter, classify, target, and direct an attack; and Direct and control the employment of friendly forces and the information necessary to provide for the administration and support of those forces. [10:2505] See also ELECTRONIC WARFARE.

SPACE AND ELECTRONIC WARFARE DISCIPLINES - SEW comprises the following warfare and warfare support disciplines: SEW Warfare Disciplines: OPERATIONAL DECEPTION, COUNTER-SURVEILLANCE, ELECTRONIC COMBAT. SEW Warfare Support Disciplines: OPERATIONAL SECURITY, SURVEILLANCE, C⁴I; and SIGNALS MANAGEMENT. [10:2505] See also SPACE AND ELECTRONIC WARFARE.

SPACE-BASED SOLAR POWER - Large solar-array satellites which collect gigawatts of solar energy and beam it to Earth. [10:3111]

SPACE-BASED WIDE AREA SURVEILLANCE SYSTEM (SB-WASS) - A surveillance system for tracking ships and aircraft on a global basis, using either active RADAR or passive INFRARED (IR) sensors, or both. []

SPACE CONTROL - The means by which space superiority is gained and maintained. It is achieved through **COUNTERSPACE OPERATIONS**. [AFDD 2-2 (Draft), 6.]

SPACE DEFENSE INTERFACE NETWORK (SDIN) - The Space Defense Interface Network (SDIN) provides the Space Surveillance C³ Interface via the Defense Satellite Communications System (DSCS) and non-DSCS leased data/voice communications that link Cheyenne Mountain's Space Defense Operations Center (SPADOC) to worldwide sensor sites and satellite owners/operators. [10:2804]

SPACE DETECTION AND TRACKING SYSTEM (SPADATS) - A system capable of detecting and tracking space vehicles from the earth, and reporting the orbital characteristics of these vehicles to a central control facility. [1.1] See also SPASUR. NOTE: SPADATS includes the SPACE SURVEILLANCE NETWORK (SSN) and SPASUR.

SPACE LATTICE PASSIVE REPEATER (SLPR) - A passive (i.e., unpowered) device used to re-direct and amplify radio wave propagation. [] See also PASSIVE REPEATER. NOTE: SLPRs are used to redirect digital RF transmissions within structures (e.g., around corners), to improve cellular communications from vehicles, and to extend the range of transmission around buildings and other obstacles.

SPACE MANEUVER VEHICLE (SMV) - A small reusable unmanned spacecraft designed to support a variety of military space missions. [] NOTE: SMV missions range from satellite deployment to terrestrial and on-orbit support.

SPACE MINE - An anti-satellite (ASAT) satellite intended to reside near its assigned target satellite, either covertly or overtly, and designed to maintain a strict position near its target by possessing identical orbital parameters. [5.8] Also called NEARSAT. Compare with HYBRID SPACE MINE. NOTE: The space mine poses a continual threat to its victim satellite because it may be activated at any time on signal.

SPACE OBJECT IDENTIFICATION SYSTEM - See DEEP VIEW.

SPACE OPERATIONS SCHEDULING & MANAGEMENT (SOPSMAN) SYSTEM - SOPSMAN is an automated system for real-time, optimal spacecraft control network scheduling and analysis. It can (2001) optimally schedule 165 network antennas to give 1000 commands to 250 spacecraft in less than 30 seconds on a Pentium II class PC with a Windows 98, 2000, or NT operating system and MS Office running in the background. [NASA RFP]

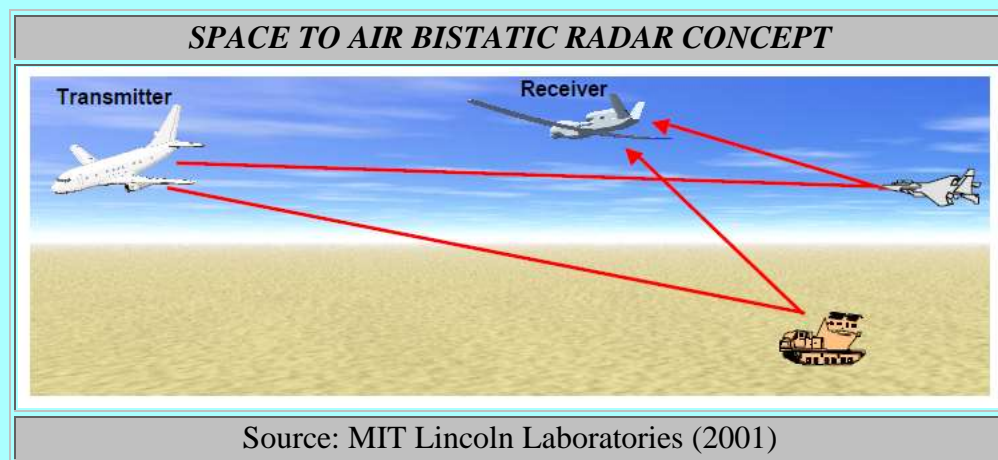
SPACE OPERATIONS VEHICLE (SOV) - A space-access lift vehicle, probably to be vertically launched, that can lift a payload into space on demand without a long

lead time. The reusable craft would have a turnaround time of one day or less.
[10:2864]

SPACE SURVEILLANCE NETWORK (SSN) - A network of 25 sites worldwide of U.S. Army, Navy and Air Force operated ground-based radars and optical sensors. []
NOTE: SSN, along with the Naval SPACE SURVEILLANCE SYSTEM (SPASUR), is part of the SPACE DETECTION AND TRACKING SYSTEM (SPADATS).

SPACE SYSTEM - A system with a major functional component which operates in the space environment. It has three elements: (1) the space element, commonly known as a satellite; (2) the terrestrial element, or ground-based assets and operations; and (3) the link element, the means by which the space and terrestrial elements pass information back and forth. [Air Force Doctrine Document (AFDD) 2-2 (Draft), *Space Operations*, Feb 1997, 24.] NOTE: Although not always the case in the past, the link today is almost exclusively a two-way electronic data transmission link. Early US photo reconnaissance satellites ejected film canisters from orbit, which reentered the atmosphere, were recovered in mid-air and developed on the ground.

SPACE TO AIR BISTATIC RADAR - A BISTATIC RADAR in which the transmitter, or illuminator, platform is a satellite, and the receive platform is an aircraft. This system may be used to extend a radar coverage area, improve target localization. [] NOTE: Since the aircraft carries no transmitter, there is a reduction in size, weight, and power requirements, and the STEALTHINESS of the aircraft is improved.



SPADATS - See SPACE DETECTION AND TRACKING SYSTEM .

SPALLING - The pushing of a stream of molten metal ahead of an armor penetrator as it bores through an armored vehicle's protective skin. []

SPASUR - An orbital space surveillance system with the mission to detect and determine the orbital elements of all man-made objects in orbit of earth. The mission

is accomplished by means of a continuous wave energy beamed vertically across the continental United States and an associated computer facility. It is the Navy portion of the North American Air Defense Command Space Detection And Tracking System (SPADATS). [1.1] SPASUR employs a BISTATIC RADAR consisting of three transmitter sites and six receiver sites and an operational control center. The transmitters illuminate the target and the signal is reflected back to the separately-located receivers. The observations from two or more receivers are combined to calculate the position of the target. [10:2645] NOTES: (1) Transmitter antennas may be as much as two miles in length. NAVSPASUR was assigned to SPADATS under operational control of CINCNORAD in February 1961, and is currently (1999) an integral component of the US Space Command Detection and Tracking System. (2) The NAVSPASUR transmitters and receivers form an electronic "fence" across the southern United States. It extends from Georgia to California (4,800 km), 1,600 km off each coast, and 24,100 km into space. The NAVSPASUR fence provides continuous surveillance and unalerted detection, warning and tracking of low-to-medium orbit space objects. [10:2804] Also called NAVAL SPACE SURVEILLANCE SYSTEM (NAVSPASUR).

SPATIAL ALLOCATION - In EMISSION CONTROL, the allocation of active (radiating) or passive (search) sectors of responsibility in space and time to concentrate radiated energy, reduce interference, maximize search coverage, or achieve some other objective. [] Contrast with SPECTRUM ALLOCATION.

SPECIAL-EFFECTS SMALL-ARMS MARKING SYSTEM (SESAMS) - A conversion kit for the M16 weapon that allows it to fire rounds that burst on impact - marking a target with a non-toxic washable paint. The projectile, which has a range of up to 25 meters, will not penetrate the skin and is used for close-quarters battle (CQB) training and to provide realism in force-on-force exercises. [10:2982]

SPECIAL FUNCTION MATERIALS - That category of MATERIALS TECHNOLOGY which addresses those materials such as high-temperature lubricants, hydraulic fluids, anti-fouling coatings required for U.S. military hardware to operate reliably at superior levels of performance. [12]

SPECIALIZED DIGITAL SUBSCRIBER LINE (xDSL) - A modulation technique that exploits unused bandwidth in copper cables. []

SPECIAL MATERIAL - See PYROPHORIC MATERIAL.

SPECIAL-MATERIAL DECOY (SMD) - An INFRARED (IR) DECOY consisting of PYROPHORIC metal (*i.e.*, Special Material) in an airtight sealed package mounted on the aircraft dispenser. The IR payload packet seal contains an integral tear strip that is attached to a drag device called a "sail". When released into the air stream the sail acts

as a parachute which generates a drag force that tears open the seal of the payload packet, allowing the pyrophoric payload to be released into the airstreams and dispersed aerodynamically as HOT CHAFF in the same manner as other types of CHAFF. [] NOTE: The metal strips that comprise the chaff are coated with pyrophoric iron; after dispersal behind an aircraft, they oxidize and release heat at temperatures up to 820 degrees Centigrade, close to an aircraft's engine temperature. [10:3078]

SPECIAL OPERATIONS (SPECOPS or SO) - Operations conducted by specially trained, equipped, and organized DoD forces against strategic or tactical targets in pursuit of national military, political, economic, or psychological objectives. These operations may be conducted during periods of peace or hostilities. They may support conventional operations, or they may be prosecuted independently when the use of conventional forces is either inappropriate or infeasible. [10:2764] NOTE: Visit the various special operations sites.

SPECIAL WEAPONS EMERGENCY SEPARATION SYSTEM (SWESS) - A SALVAGE FUZE that automatically detonates (below a preset altitude) armed (nuclear) weapons over enemy territory in the event the carrying aircraft and/or crew become incapacitated during a combat mission. [10:2779] Also called DEAD MAN'S SWITCH. NOTE: The Soviets had a similar system called "Dead Hand".

SPECIFIC EMITTER IDENTIFICATION (SEI) - The capability to identify a specific radar through its unique electronic signature. SEI data can be used to re-identify emitters with high confidence and can provide location, identification, and tracking information for friendly or enemy emitters. [10:2935]

SPECKLE - See LASER SPECKLE.

SPECKLE TRACKING - A radar technique used to measure a target's angular dynamics. [10:2504]

SPECTRA RECOGNITION - Target analysis through use of pattern recognition techniques to identify jamming modulations, JET ENGINE MODULATION, and true Doppler. [10:2446]

SPECTRAL DIVERSITY - That attribute of a device that allows it to operate in two or more SPECTRAL REGIONS (e.g., IR and RF). []

SPECTRAL REFLECTANCE - The ratio of the reflected radiant power to the incident radiant power at a particular wave-length, or within a small band of wave-lengths about a particular wavelength. [3]

SPECTRAL REGION - A band of frequencies having common characteristics relating both to the physics and sources of radiation and the technology needed for sensing the radiation. The spectral regions are: Acoustic (1 Hz - 10kHz); RF (LF through EHF, MMW); Infrared; Visible Light; Ultraviolet Light; Nuclear Particles; and Non-Nuclear Particles. [5:2]

SPECTRAL SIGNATURE - Characteristic radiation in the **SPECTRAL REGION** by an object. []

SPECTROZONAL PHOTOGRAPHY - A photographic technique whereby the natural spectral emissions of all objects are selectively filtered in order to image only those objects within a particular spectral band or zone and eliminate unwanted background. [1.1]

SPECTRUM - See **ELECTROMAGNETIC SPECTRUM**.

SPECTRUM ALLOCATION - In **EMISSION CONTROL**, the assignment of active (radiating) or passive (search) responsibilities in specific bands or regions of the **ELECTROMAGNETIC SPECTRUM** - to reduce the possibility of detection, or maximize search coverage, for example. [] Contrast with **SPATIAL ALLOCATION**.

SPECTRUM MANAGEMENT - Planning, coordinating, and managing joint use of the **ELECTROMAGNETIC SPECTRUM** through operational, engineering, and administrative procedures, with the objective of enabling electronic systems to perform their functions in the intended environment without causing or suffering unacceptable interference. [7:CJCS MOP 6, APPENDIX B]

SPECULAR REFLECTION - Reflection from a smooth surface. [3] Contrast with **DIFFUSE REFLECTION**.

SPHERES - See **SYNCHRONIZED POSITION HOLD, ENGAGE, REORIENT, EXPERIMENTAL SATELLITE**

SPIDER - A type of software robot, or BOT, which searches the Internet for documents and their **HYPERLINKS** to associated **UNIVERSAL RESOURCE LOCATORS** (URLs). It retrieves information to build a database or index related to the word or phrase which generated the search. Also called **CRAWLER**, **WANDERER**, **WEB SPIDER**. [] NOTE: Spiders may retrieve large amounts of the located documents, titles only, or perform other tasks, such as validating references, etc...

SPIDER HOLE - A camouflaged foxhole. []

SPIN ELECTRONICS - See MAGNETOELECTRONICS

SPINTRONICS - See MAGNETOELECTRONICS

SPONGE GRENADE - A NONLETHAL WEAPON which marks its target with dye contained in the sponge. [10:2745]

SPOOFER - A platform employing ELECTRONIC DECEPTION or tactical deception measures. []

SPOOFING - Deceiving - spoofing generally refers to tricking the adversary into believing false information. [] LISTEN to Crypto Spoofing. LISTEN to Frequency Shift Keying (FSK) Spoofing.

SPOT JAMMING - See NARROWBAND JAMMING.

SPOT NOISE JAMMING - See NARROWBAND JAMMING.

SPRAY-ON ANTENNA - A metal or carbon-based paint which is sprayed over a template having an antenna pattern on it, onto a surface (e.g., plastic form, wall, window, tent, etc.). [10:2895] NOTE: A transparent paint may be used so that the antenna is unobtrusive, or must be transparent, such as on a windshield.

SPREAD SPECTRUM - (1) A modulation technique for multiple access, or for increasing immunity to noise and interference. [3] (2) A generic term for techniques which employ a bandwidth for transmission larger than theoretically needed to send information and which employ an independent spreading code for controlling the bandwidth spreading. [4:13] (3) Any modulation scheme that produces a spectrum for the transmitted signal much wider than the bandwidth of the information bearing signal. [10:2576] Examples of SPREAD SPECTRUM are DIRECT SEQUENCE SPREADING, FREQUENCY HOPPING, and TIME HOPPING. HISTORICAL NOTE: Austrian-born Hedy Kiesler Markey, known as movie star Hedy Lamarr (1913-2000) and American-born composer George Antheil (1900-1959) invented and patented a secret communications system, U.S. Patent 2,292,387 issued August 11th, 1942 . The purpose of the system was to provide reliable and jam proof control of long range torpedoes. The system involved the use of the frequency hopping principles of Spread Spectrum radio.

SPUR - Harmonics generated by digital RF memories (DRFMs) in its digitizing process. [10:110] NOTE: Spurs are detectable and recognizable as outputs of DRFMs.

Sputnik - The world's first artificial satellite. It was spherical in shape, with four antennas about 8-9 feet in length, 23 inches in diameter, and weighed 183.4 lbs. It

circled the globe every 96 minutes at a speed of 18,000 mph for 92 days until January 4, 1958, when it re-entered the atmosphere and burned up. [10:2578]

SPYWARE - A broad family of software products that reside on a computer to monitor its activities. Monitored activities include the user's Web page preferences, keystrokes (thus disclosing user names and passwords, among other data). These data are passed to the HACKER for various uses such as in marketing statistics, or for more devious purposes. [Source: www.military.com, July 16, 2004] NOTES: (1) Anti-virus software falls in the category of spyware. (2) One problem with protecting privacy is that some spyware is installed on a computer with the user's consent, such as when COOKIES are accepted, or if the user has opted for low protection thus allowing cookies to be installed on the computer without the user's knowledge such as when visiting a Web site, or even clicking to open an e-mail message. (3) As an example, in the so-called "Moonlight Maze" incident in the late 1990s, the U.S. Army Corps of Engineers' computers were made victims of a major cyberattack using spyware by a group of Russian hackers who gathered sensitive data from the targeted computers and moved it to Russia. Fortunately, the U.S. was aware of the attempt, allowing it to proceed to its conclusion, and then informed the Russian government which supposedly arrested the hackers.

STACKED BEAM RADAR - A RADAR that forms two or more simultaneous beams at the same azimuth but at different elevation angles. The beams are usually contiguous or partly overlapping. Each stacked beam feeds an independent receiver. [3]

STANDARD GENERALIZED MARKUP LANGUAGE (SGML) - An early form of the **HYPERTEXT MARKUP LANGUAGE (HTML)**. []

STANDFORWARD JAMMING - An ECM tactic where the jamming platform is positioned between the hostile missile system and the protected friendly forces. [8] Contrast with **COLINEARITY**.

STAND-IN EW SUPPORT - Mission support in which EW platforms remain in friendly territory or air space just outside the enemy border or combat zone. [10:127*] Contrast with **DIRECT EW SUPPORT**, **STAND-OFF EW SUPPORT**.

STANDING WAVE REFLECTOMETRY (SWR) - A **REFLECTOMETRY** technique using sine waves. SWR sends a sine wave down the wire; a reflected sine wave is returned from the end of the wire and the two signals add to form a standing wave on the line. The peaks and nulls of this standing wave provide information on the length and termination load on the cable; a healthy cable's wave pattern will differ from that of a line with an open or short circuit. [10:2871] See also **SMART WIRE**, **FREQUENCY DOMAIN REFLECTOMETRY (FDR)**, and **TIME-DOMAIN REFLECTOMETRY (TDR)**.

STAND-OFF EW SUPPORT - Mission support in which EW platforms remain in friendly territory at some distance greater than that for **STAND-IN EW SUPPORT**. [10:127*]

STAND-OFF JAMMING SUPPORT - That part of **TARGET AREA JAMMING SUPPORT** in which the jamming aircraft remains in friendly territory, a safe distance from enemy fire. [10:2521] Contrast with **CLOSE-IN JAMMING SUPPORT**. See also **AREA JAMMING SUPPORT**, **CORRIDOR JAMMING SUPPORT**, **DIRECT JAMMING SUPPORT**, **STANDOFF JAMMING (SOJ)**.

STANDOFF JAMMING (SOJ) - A **SUPPORT ECM TACTIC** where the **JAMMING** is effected by escort vehicles rather than by the platform to be protected. The escort vehicles frequently stand off at a distance from the target, out of range of the target defenses. [4:7] See also **CLOSE SUPPORT JAMMING**.

STAND-OFF RADIATION DETECTION SYSTEM (SORDS) - An advanced nuclear detector having the ability to autonomously determine the location of distant radiation sources while maintaining sufficient energy resolution and sensitivity to reliably discriminate between normally-occurring radioactive materials, background, and potential threats. The objective of the **SORDS** approach is to develop vehicle-sized radiation detectors with the capability of determining the direction, flux, energy, and isotope of detected radiation, as well as the location of the radiation source. Another objective of systems developed under **SORDS** is a very low false alarm rates to minimize interruptions of day-to-day security operations. (NOTE: **SORDS** could be used in a wide range of monitoring applications including border crossings, sea lanes and air surveillance,) [DHS Press Release October 1, 2007]

STARFLASH STUN GRENADE - A **NONLETHAL WEAPON** which produces a loud blast, an intense flash of light and produces a shower of white-hot sparkles. [10:2745]

STARING DETECTOR - A detector that maintains a constant vigil over the area in which it is pointed. Sometimes called a **FOCAL PLANE ARRAY (FPA)**. [10:16] Contrast with **SCANNING DETECTOR**. NOTE: The staring detector brings the advantage of few, if any, moving parts and continuous coverage of the field of view (FOV). It depends upon a mosaic of detector elements placed at the focal plane of the optical system and "sees" the complete scene in a single view. This arrangement produces a spatial as well as temporal differentiation of the target and thus produces more data for possible target identification and clutter rejection. [10:2574]

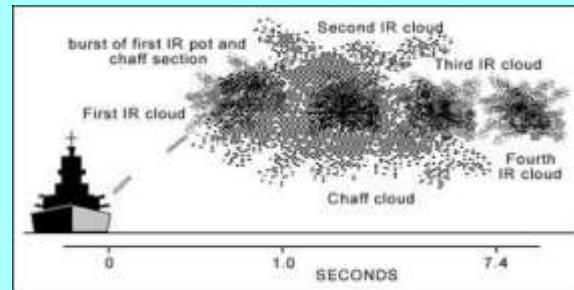
STEALTH TECHNIQUES - Techniques which enhance the ability of a platform or weapon to pass imperceptibly through areas protected by sensors and weapons

systems. [] Synonymous with LOW OBSERVABLES TECHNIQUES. See also OBSERVABLES.

STEALTHY SHIP ANTENNA - See MULTIFUNCTION ELECTROMAGNETIC RADIATING SYSTEM (MERS).

STEGANOGRAPHY - The art and science of communicating in a way which hides the existence of the communication. [10:2712] NOTE: Steganography attempts to hide messages inside other harmless messages in such a way that third parties cannot detect the existence of the concealed message.

STEPPING ROUND - A mortar-launched DECOY device which produces a sequential blooming of INFRARED (IR) (or DISTRACTION CHAFF) clouds in order to simulate a moving target and SEDUCE enemy rounds away from the launching platform (usually a ship). See the figure below. []



STEREOLITHOGRAPHY - A process which generates plastic forms or parts directly from CAD/CAM/CAE data. [10:111] See also SELECTIVE LASER SINTERING.

STEREOSCOPIC TRACKING - Target tracking through simultaneous use of data from two or more sensors. []

STICKY FOAM - A NONLETHAL WEAPON consisting of polymer agents that will hopelessly stick a person to anything. [10:2754] NOTE: Sticky foam is also used to reinforce obstacles.

STICKY SHOCKER[®] - A NONLETHAL WEAPON consisting of wireless, self-contained projectile that contains a battery pack and associated electronics that can impart a short burst of high-voltage pulse to disable a human target temporarily (e.g., a few minutes). NOTE: The projectile is encased in a sticky substance, similar to STICKY FOAM, which causes it to stick to its target, and contains barbs that can penetrate thick clothing and leather in order to bring the electrodes near the skin. [Jaycor press release - 2001 <http://www.jaycor.com/eme/sticky.htm>]

STING NET - A NONLETHAL WEAPON which launches two projectiles connected by a tether which, upon contact, immobilizes the targeted individual(s). [10:2745]

STINGBAG - A NONLETHAL WEAPON gun round consisting of a cloth bag containing a small amount (1-oz.) of lead shot. [10:2745]

STINGBALL STUN IMPACT GRENADE - A NONLETHAL WEAPON consisting of a hand-thrown spherical grenade which produces a loud blast and a bright flash of light while dispersing 100 soft rubber, marble-sized stingballs. [10:2732] NOTE: The stingball stun impact grenade can be configured to also release a quantity of CS tear gas.

STINGSHOT - A NONLETHAL WEAPON gun round loaded with rubber projectiles (either 18 pellets, 3 balls, or a rubber rocket). [10:2745]

STORAGE and TRANSPORTATION FRAME (STF) - Storage frames, resembling shark cages, designed to fit snugly inside standard 8 x 8 x 20 foot ISO (International Standardization Organization) containers (five STFs can be placed in the standard ISO container). A smaller STF, termed V-STF (Vehicle Storage and Transportation Frame) is designed to fit inside a High Mobility Multipurpose Wheeled Vehicle (HMMWV, "Hummer", or "Humvee") [10:2989] NOTE: Replacing the traditional wooden boxes, STFs and V-STFs eliminate the need to remove blocking and bracing lumber. In addition, they can be folded flat for later re-use.

STOVEPIPE -

(1) An EW acquisition community group. The five stovepipes are warfighters, acquisition and program management staff, industry, developmental testers, and operational testers. [10:2579]

(2) A non-integrated system in which data flows vertically, *i.e.*, intrasystem *versus* intersystem, or within a department, or independent acquisition program, or a system designed to engage a specific threat, not crossing boundaries with other systems. []
NOTE: Although it is generally thought that stovepipes should be supplanted by integrated systems, it may be more effective, at times, to employ a stovepipe; for example a mission-critical system that should not integrate across culturally different (such as highly differing security classification levels) or fiercely independent systems having their own budgets, constituencies, and LEGACY systems.

STOVEPIPE STABILIZER - A mechanical configuration of two solid cylindrical trapezoids to produce a variable elevation coverage for a rotating radar antenna. [8]

STOVEPIPE SYSTEM - An intelligence system characterized by a vertical organization for collecting, processing, analyzing & disseminating a single category

of intelligence without integrating other types of intelligence into the final product. [10:2309]

STRATEGIC ECM - The use of ECM equipment and techniques by strategic platforms to increase probability of strategic mission success. [10:38]

STRATEGIC ELECTRONIC INTELLIGENCE (STRATEGIC ELINT) - ELINT relating to a) establishing the state-of-the-art in the threat; b) movement of a significant emitter or emitters; or c) defining the direction of ECM research and development programs. [10:59] Contrast with **TACTICAL ELECTRONIC INTELLIGENCE**.

STRATEGIC MILITARY DECEPTION - MILITARY DECEPTION planned and executed to result in foreign national policies and actions which support the originator's national objectives, policies, and strategic military plans. Strategic Military Deception is a category of Military Deception. [1.1] Contrast with **TACTICAL MILITARY DECEPTION**. See also **DECEPTION, DEPARTMENT / SERVICE MILITARY DECEPTION**.

STRATEGIC WARNING - A warning prior to the initiation of a threatening act. [1.1] Contrast with **TACTICAL WARNING**.

STRATEGY - The art and science of developing and using political, economic, psychological, and military forces during peace and war, to afford the maximum support to policies, in order to increase the probabilities and favorable consequences of victory and to lessen the chances of defeat. [1.1]

STREAK-TUBE IMAGING LIDAR (STIL) - An underwater mine detection system carried by underwater vehicles and used to gather high resolution 3-dimensional imagery of the ocean bottom to detect and identify man-made objects. [] NOTE: The STIL uses a pulsed blue-green LASER and a fixed cylindrical lens to project a fan-shaped beam beneath the vehicle onto the ocean floor. Conventional optics image the illuminated stripe onto a slit photocathode of the streak tube and further processing produce 2-D and 3-D images for analysis. [12.1]

STREAM - Dispensing of CHAFF (solid/random interval/bursts). [1.1]

STRIKE WARFARE (STW) - Attack by aircraft and ships, not in direct support of amphibious operations, against enemy land targets, including ships and water craft in harbors and anchorages, and aircraft and other vehicles on the ground. []

STRING - A consecutive series of letters, numbers, and other characters. "bWn[&*+'%" is a string; so is "Tillie, the Ticklish Horse". [] NOTE: Anti-virus

applications often use specific strings, called virus signatures, to detect viruses. See Also SIGNATURE.

STRIPING - A method for spreading data across multiple disks. [10:124] See also REDUNDANT ARRAYS OF INEXPENSIVE DISKS.

STRIPLINE DEVICE - A CONFORMAL ANTENNA consisting of a sandwich of three parallel conducting layers separated by two thin dielectric substrates, the center conductor of which is analogous to the center conductor of a coaxial transmission line. If the center conductor couples to a resonant slot cut orthogonally (i.e., at right angles to) in the upper conductor, the device is said to be a stripline radiator. [10:54] Contrast with MICROSTRIP ANTENNA. See also CONFORMAL ANTENNA ARRAY, DOUBLY CONFORMAL ANTENNA, SHARED-APERTURE ANTENNA.

STRUCTURAL AMORPHOUS METAL (SAM) - A new (2002) class of materials that exhibit unique combinations of properties such as hardness, strength, damage tolerance and corrosion resistance. [10:2955] Also called METALLIC GLASS ALLOYS. NOTE: Structural amorphous metals are produced at low cooling rates resulting in an amorphous or "glassy" structure.

STRUCTURAL MATERIALS - That category of MATERIALS TECHNOLOGY which addresses a broad range of materials classes used for the fabrication of military systems. This category is subdivided into (1) high-strength materials, which encompass those materials used for fabrication of military vehicles of virtually every shape and description, and (2) high-temperature materials, which are used primarily for propulsion purposes and hypersonic airframes. [12]

STUB NETWORK - A NETWORK which carries PACKETS to and from local hosts. Even if it has paths to more than one other network, a stub network does not carry traffic for the other networks. [10:2736] See also BACKBONE, MID-LEVEL NETWORK, TRANSIT NETWORK.

STUN DISTRACTION DEVICE - A NONLETHAL WEAPON which produces a bright light and a loud noise, enabling the user to confuse, disorient and momentarily distract a potentially threatening individual or group. [10:2745]

SUB-LETHAL WEAPON - See NONLETHAL WEAPON.

SUBMARINE LAUNCHED MOBILE MINE (SLMM) - A submarine-laid bottom mine consisting basically of a modified torpedo. SLMM is intended for use in areas inaccessible to other mine deployment techniques, or for covert mining of hostile

environments. (See logo) [Navy CHINFO press release] See also CAPTOR and QUICKSTRIKE.

SUBMARINE LAUNCHED ONE-WAY TRANSMISSION (SLOT) BUOY - An untethered buoy (about the size of a sonobuoy) which can be ejected from a submarine; the device carries a tape-recorded message to be transmitted when the buoy reaches the surface. [] See also RETRIEVABLE TETHERED OPTICAL FIBER.

SUBMUNITION BMD COUNTERMEASURES - Techniques to overwhelm ballistic missile defenses by creating multiple warheads which would be dispensed by the missile at the end of a powered flight, or by the use of multiple, independently-targeted reentry vehicles (MIRVs). [10:2609] See also EVASIVE MANEUVERS BMD COUNTERMEASURES, FALSE-TARGET BMD COUNTERMEASURES, SHROUDING BMD COUNTERMEASURES, TRAJECTORY BMD COUNTERMEASURES.

SUPERBARRICADE - A rocket-propelled cargo-launch system with fixed or trainable aiming. A typical system consists of a bridge display unit, a computer to calculate optimum launch patterns based on inputs from the vessel's log, gyro, wind measurement, and ESM systems. Superbarricade can launch either infrared decoys (FLAREs) or radar DECOYs (CHAFF), as well as torpedoes and limited hard-kill rounds. Superbarricade receives its CUEING automatically from an external ESM system and can react by firing the protective decoys in as little as 150 milliseconds. [10:2669]

SUPER BLUE - An enhanced version of BLUETOOTH. that has the ability to transfer data over a much longer distance using the same protocol features and physical layer as that of the standard Bluetooth link. The only difference is that the transmitted power will be much higher for the SuperBlue devices, *e.g.*, 1Watt instead of 100mW. [10:3037] See also GRAYTOOTH.

SUPERCAPACITOR - A capacitor used in lieu of, or to supplement, batteries by providing a quick burst of energy when needed. Also ULTRACAPACITOR, DOUBLE LAYER CAPACITOR. [10:3108]

SUPER CAUSTICS Acid agents that can be stored in harmless binary form. They can be used against weapons, tires, roads, roofs, optical systems, or even shoes. [] NOTE: A super caustic may be considered a NONLETHAL WEAPON if used to deny human contact.

SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE (SQUID) - A device which, together with signal-processing techniques, is used to detect sea mines on the seabed or buried in the seabed. SQUID calculates the position of the sea mine based on the distortion of the earth's magnetic field caused by metallic objects on or in the ocean floor. [12.1]

SUPERCONDUCTIVITY - A property of a material that is characterized by zero electric resistivity and, ideally, zero permeability. [3] NOTE: Superconductivity is a phenomenon in which the electrical resistance of a substance ceases. When discovered in 1911, superconductivity occurred only at extremely low temperatures - a few degrees above absolute zero. Recently, however, superconductivity has been demonstrated at much higher temperatures, and scientists are searching for room-temperature superconductors.

SUPER HIGH-POWER LASER (SHPL) - A LASER capable of delivering output energy exceeding 1 kiloJoule within 50 milliseconds, or having an average or CW power exceeding 20 kiloWatts. [12]

SUPER RESOLUTION VISION SYSTEM (SRVS) - An image processing system which exploits atmospheric distortion to allow, for example, marksmen to see targets at a greater distance than with conventional optics. NOTE: Atmospheric turbulence in the form of heat shimmer can greatly limit the distance ground-based electro-optical and infrared systems can observe and track objects on the ground. The SRVS exploits an atmospheric phenomenon known as turbulence-generated micro-lensing (the brief appearance of high-resolution "lucky" image out of a distorted scene) and signal processing to stitch a complete image out of distorted fragments.. [10:3101]

SUPER WIDE AREA NETWORK SATELLITE (SWANsat) - A constellation of four to twelve high-power geosynchronous orbiting (GSO) satellites licensed to provide two-way broadband services in the W band. NOTE: This is a project of the Republic of Nauru (South Pacific). [10:2669]

SUPPLY CHAIN MANAGEMENT (SCM) - The integration of key business processes from end-user through original suppliers, that provides products, services, and information that add value for customers and other stakeholders. [*Business Week*, at www.businessweek.com]

SUPPORT ECM TACTIC - JAMMING tactics which include **STANDFORWARD JAMMING**, **STANDOFF JAMMING (ESCORT JAMMING)**, and **ACCOMPANYING JAMMING**. []

SUPPORT ECM TECHNIQUE - An ECM technique used by a support platform to protect another platform from electronic systems external to both the protected and support platforms. [] Contrast with **SELF-SCREENING ECM**.

SUPPORT JAMMING - (1) The JAMMING of hostile electronic systems by a platform in order to protect other friendly vehicles. (2) The accompanying of a jamming aircraft with strike aircraft into an enemy target area. [8] Contrast with SELF-PROTECTION . See also ACCOMPANYING JAMMING, DIRECT EW SUPPORT, STANDOFF JAMMING (ESCORT JAMMING), STANDFORWARD JAMMING..

SUPPRESSION OF ENEMY AIR DEFENSE (SEAD) - The activity which neutralizes, destroys, or temporarily degrades enemy air defenses in a specific area by physical attack, deception, and/or electronic warfare. [7:CJCS MOP 6, APPENDIX B] See also IRON HAND, WILD WEASEL.

SURFACE ACOUSTIC WAVE CHEMICAL AGENT DETECTOR (SAWCAD) - A small UAV-mounted sensor intended to collect ambient atmospheric data and detect, identify, and report the presence of chemical vapors downwind from an emission source. [10:2707]

SURFACE-EMITTING LASER - Laser light shining through the circular grating from a broad area on top of the structure parallel to the active layer. [10:129] NOTE: The grating collimates the beam so that is circular in cross-section and has 1/60 the divergence of a traditional edge-emitting laser.

SURF EAGLE - A program to fuse, analyze and disseminate data derived from National Technical Means (NTM) with publicly available and open source data [maritime, Land remote-sensing Satellite (LANDSAT), French *Système Probatoire d'Observation de la Terre* (SPOT), Acoustic Intelligence (ACINT), meteorologic, and oceanographic]. [10:3024]

SURF-ZONE ARRAY (SZA) - An explosive clearing system used to clear mines at a beach from three feet to the mean high water mark. [10:2691] See also BEACH-ZONE ARRAY (BZA), LINE CHARGE (LC).

SURGICAL COUNTERMEASURES - The closed-loop process of electromagnetically operating on an electronically controlled system from a remote moving EW platform. [4:20]

SURVEILLANCE - (1) The systematic observation of aerospace, surface or subsurface areas, places, persons, or things, by visual, aural, electronic, photographic, or other means. [1.1] (2) A SPACE AND ELECTRONIC WARFARE (SEW) warfare support discipline that includes the tactical management of all technical surveillance as a force system across the entire multi-dimensional battle space, including all sensors, regardless of location (whether national, theater, or platform) or ownership

(whether component, joint or combined). [10:2505] See also AIR SURVEILLANCE, COMBAT SURVEILLANCE, SEA SURVEILLANCE.

SURVEILLANCE GRID - A SPACE AND ELECTRONIC WARFARE (SEW) concept in which sensors are considered to be a "grid of capabilities overlaying the battle space instead of a series of single sensors". [10:2505] See also COMMUNICATIONS GRID, TACTICAL GRID.

SURVEILLANCE SEDUCTION - A strategic countermeasure involving simulated operations or simulation of a large force and intended to mislead an enemy about major planned operations. [4:23] See also SIMULATIVE COMMUNICATION, ELECTRONIC, ELECTROMAGNETIC DECEPTION, IMITATIVE COMMUNICATION, ELECTRONIC, ELECTROMAGNETIC DECEPTION, MANIPULATIVE COMMUNICATION, ELECTRONIC, ELECTROMAGNETIC DECEPTION, COMMUNICATION DECEPTION, ELECTROMAGNETIC DECEPTION, ELECTRONIC DECEPTION.

SURVIVABILITY ENHANCEMENT - Techniques or devices which increase the probability of survivability of the using entity. []

SUSCEPTIBILITY - A measure of an electronic system's design that determines the effect of ECM on system performance. [4:13] See also ACCESSIBILITY, INTERCEPTIBILITY and VULNERABILITY..

SUSTAINABILITY - The component of MILITARY CAPABILITY that relates to the ability to maintain the necessary level and duration of operational activity to achieve military objectives. Sustainability is a function of providing for and maintaining those levels of ready forces, materiel, and consumables necessary to support the military effort. [1.1]

SWARF - Technically, the metallic filings and dust resulting from grinding operations. The term is also used to refer to space debris. []

SWEEP JAMMING - A narrow band of JAMMING that is swept back and forth over a relatively wide operating band of frequencies. [1.1]

SWEPT NOISE JAMMING - See SWEEP JAMMING.

SWEPT SPOT JAMMING - See SWEEP JAMMING.

SWING WING ADAPTER KIT (SWAK) - A temporary wing attachment used to provide the SMALL DIAMETER BOMB (SDB) a standoff of greater than 25 nautical

miles from high altitude release. The wing is jettisoned at a midcourse way-point if penetration is required, so that velocity can be increased after wing release. For soft targets (*e.g.*, personnel, structures, non-armored vehicles) the wing continues to extend the bomb's glide range until small arms threat altitude is reached. At this point the wings are released. []

SWITCHED VIRTUAL CIRCUIT (SVC) - A VIRTUAL CIRCUIT set up (provisioned) for a communications session and torn down when the session is over. [10:2632]

SYNAPTIC ANTENNA - A grid of radio frequency conducting segments joined by small electro-optical, computer-controlled switches. This arrangement allows the computer to rapidly change the antenna's characteristics (*e.g.*, frequency, beam forming, steering and POLARIZATION). [10:2653] See also PHASED ARRAY ANTENNA, SMART SKIN.

SYNCHRONIZED POSITION HOLD, ENGAGE, REORIENT, EXPERIMENTAL SATELLITES (SPHERES) - (2005) Three self-contained, bowling-ball size satellites (or "free-flyers") which perform various navigation and formation flying algorithms for multi-spacecraft control. [NASA *Expedition 13 Press Kit*, 3/17/2006]

SYNCHRONOUS CONDENSER - An electric generator optimized and operated to act like a capacitor or inductor as required, providing a power grid with reactive power to compensate for unwanted reactive power caused by rotating machinery. [10:3064]

SYNCHRONOUS COMMUNICATIONS - A communication PROTOCOL in which each data bit is transmitted according to a given time sequence. Contrast with ASYNCHRONOUS COMMUNICATIONS. []

SYNCHRONOUS JAMMING - Transmission of jamming pulses or other waveforms in synchronism with the victim radar's pulse repetition frequency. [8]

SYNCHRONOUS OPTICAL NETWORK (SONET) - An international standard for high-speed data communications over FIBER-OPTIC media. [10:2736] NOTE: SONET is a ring consisting of nodes connected by high-capacity optical links to form a cycle. This configuration affords high survivability since every pair of nodes is connected by a physically diverse route. Consequently no single link failure will disconnect the ring.

SYNTHETIC APERTURE RADAR (SAR) - A RADAR system that generates the effect of a long antenna by signal processing means rather than by actual use of a long physical antenna. [3] NOTE: The long antenna is synthesized through the motion of a small

antenna relative to the target with either the antenna or the target or both moving. The synthesized antenna length is given by the trajectory traversed by the small antenna relative to the target during the time the signal received by the antenna is processed (i.e., the coherent integration time).

SYNTHETIC APERTURE SONAR (SAS) - A multi-frequency SONAR which employs a multi-element linear array and a data acquisition system to record phase and amplitude information for each element. SAS uses low frequencies to detect objects at long ranges and those buried just beneath the ocean floor, medium frequencies to detect and classify targets, and higher frequencies to facilitate object discrimination and identification at short ranges (*e.g.*, imagery revealing the rib and spar structure inside a submerged wrecked aircraft). [] See also **MOBILE UNDERWATER DEBRIS SURVEY SYSTEM (MUDSS)**. NOTE: SAS provides high-resolution detection, classification, and identification of proud and buried mounds in water depths to 25 meters. [12.1]

SYNTHETIC MULTIFUNCTION MATERIALS (SMFM) - Composite materials incorporating morphological arrangements that can provide structural capability plus one or more of the following features: energy generation, self-repair, sensing, ballistic and/or blast protection. [10:2955]

SYNTHETIC THEATER OF WAR (STOW) - An advanced distributed simulation system to improve joint training, mission rehearsal, and experimentation. It may be populated with intelligent synthetic forces operating within an interactive natural environment and then interact with the simulation from distributed locations across the country using a simulation network. [] NOTE: Advances in computer technology, networking, and computer-generated forces make it possible to create a virtual battlefield, representative of any location in the world.

SYSTEM - (1) Any organized assembly of resources and procedures united and regulated by interaction or interdependence to accomplish a set of specific functions. [1.1] (2) A set of interconnected elements constituted to achieve a given objective by performing specified functions. [3] NOTE: A SYSTEM performs a function not possible with any of the individual parts. Complexity of the combination is implied.

SYSTEM ARCHITECTURE - The structure and relationship among the components of a system. The system architecture may also include the system's interface with the operational environment. [10:33]

SYSTEM ERROR - A **FAULT TOLERANCE** term. That part of the system state, with respect to the computation process, that is liable to lead to a **FAILURE**. [10:2701] See also **FAULT**, **FAULT LATENCY**.

SYSTEM-GENERATED ELECTROMAGNETIC PULSE (SGEMP) - The re-radiation of an **ELECTROMAGNETIC PULSE (EMP)** by a system or device.

[10:2541] **NOTE:** For example, when the metal skin of a spacecraft is struck by gamma rays, it acts as a secondary radiator due to the **FORWARD** and **BACKSCATTER** of its own electrons. See also **INDUCED ELECTROMAGNETIC PULSE (IEMP)**.