

# NAVIGATION ACRONYMS, ABBREVIATIONS AND DEFINITIONS

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'	minute (= 1°/60)
112	European emergency phone number (= 911 in US, 999 in UK)
1st4sport Qualifications	Awarding body of the NCF
2-AFC	two-alternative forced-choice (procedure used in animal studies)
2dRMS	twice distance root-mean-square <i>Twice the root-mean-square of the radial distances from the true position to the observed positions obtained from a number of trials. Should contain 95% of observed positions.</i>
2SOPS	2nd Space Operations Sqn (of 50th Space Wing)(USAF) <i>Exercise command and control of GPS satellite constellation.</i>
3DNC	Three-dimensional digital navigational chart
3G	third generation (of mobile phone technology or telematics) <i>There is also 2G, 2.5G and 4G for phones.</i>
3GPP	3G Partnership Project
3GT	3rd Generation Telematics (ERTICO and OSGi project)
802.11	a wireless interconnection standard with a range of 50 metres <i>Also known as WiFi. An IEEE standard.</i>
911	US emergency phone number (= 112 in Europe, 999 in UK)
a	atto (SI unit multiplier of 10 <sup>-18</sup> ) semi-major axis of ellipse (for WGS-84 = 6,378,137 m)
A-band	NATO radar band 0-250 MHz = > 1.2 m
A-GNSS	(AGNSS) Assisted GNSS
A-GPS	(AGPS) Assisted GPS
A-NPA	Advance Notice of Proposed Amendment (EU JAA)
A-NPRM	Advance Notice of Proposed Rulemaking (FAA, FCC etc)
A-S	anti-spoofing <i>In GPS the use of encryption to prevent a P-Code receiver locking to a bogus P-Code transmission.</i>
A-SMGCS	Advanced Surface Movement Guidance & Control System
A/A	air-to-air
A/D	(a/d) aerodrome analogue-to-digital
A/G	air-to-ground

<b>A/J</b>	anti-jamming
<b>A1A</b>	CW telegraphy (eg morse code) keying the transmitted signal
<b>A2A</b>	CW telegraphy (eg morse code) keying the modulation only
<b>AA</b>	Aircraft Address (unique ident 24 bit ident number - ICAO Mode S)
<b>AAA</b>	airfield avoidance area
<b>AAAF</b>	Association Aéronautique et Astronautique de France
<b>AAC</b>	aeronautical/airline administrative communications Army Air Corps
<b>AAD</b>	Additional Airworthiness Directive assigned altitude deviation
<b>aae</b>	above aerodrome elevation
<b>AAF</b>	Army Air Field (US)
<b>AAI</b>	Airports Authority of India angle of approach/attack indicator
<b>AAIB</b>	Air Accidents Investigation Branch (of UK DfT)
<b>AAIM</b>	aircraft autonomous integrity monitoring
<b>aal</b>	above aerodrome level
<b>AALA</b>	Adventure Activities Licensing Authority (UK)
<b>AAPS</b>	Automated Aid Positioning System (US)
<b>AATCU</b>	ATCOs' union in Serbia & Montenegro
<b>AB</b>	Able Seaman
<b>ab initio</b>	'from the beginning' (elementary training)
<b>ABAS</b>	aircraft-based augmentation system
<b>ABIP</b>	Advisory Board of Interested Parties (EASA)
<b>ABLOS</b>	Advisory Board on the Law of the Sea (IHO, IAG & IOC)
<b>abm</b>	abeam (at 90° to track)
<b>ABn</b>	aerodrome beacon
<b>ABOI</b>	Association of British Offshore Industries
<b>ABP</b>	active bus priority (traffic lights) Association of British Ports <i>London based private company owning several UK ports.</i>
<b>ABS</b>	Acoustic Backscatter System American Bureau of Shipping (classification society) <i>HQ Houston, TX, USA. European HQ London.</i> Automatic Blink System (LORAN-C integrity channel)
<b>absolute accuracy</b>	(geodetic or geographic accuracy) <i>The accuracy of a position with respect to the geographic or geodetic coordinates of the earth (IMO).</i>
<b>AC</b>	Admiralty Chart Advisory Circular (FAA)
<b>ac</b>	aircraft
<b>AC</b>	altocumulus cloud

	Analysis Centre (IGS)
<b>AC(YPS) Act</b>	Activity Centres (Young Persons' Safety) Act 1995 (UK)
<b>Acacia</b>	<i>Project to develop a definitive, consistent and joined-up national infrastructure of property addresses and related data with the related mapping. OS, HMLR, RoS, Valuation Office Agency (VOA), Improvement and Development Agency (IDeA) and Royal Mail.</i>
<b>ACARE</b>	Advisory Council for Aeronautics Research in Europe
<b>ACARS</b>	Aircraft Communications Addressing and Reporting System (ARINC) <i>Civil air data link for air-to-ground business and ATS messages.</i>
<b>ACAS</b>	Airborne Collision Avoidance System (=TCAS in USA) <i>ACAS-II current from 2000. Mandatory in Europe for ac &gt;5,700 kg MTOW or &gt;19 pax seats from 1 Jan 05.</i>
<b>Acc</b>	altocumulus castellanus cloud
<b>ACC</b>	adaptive cruise control
	Antarctic Circumpolar Current
	area control centre (ATC - international; ARTCC in US)
<b>ACCLAIM</b>	Antarctic Circumpolar Current Levels by Altimetry and Island <i>Contributes to the World Ocean Circulation Experiment (WOCE) of the World Climate Research Programme.</i>
<b>accuracy</b>	<i>The degree of conformance between the estimated or measured parameter of a craft at a given time and its true parameter at that time (IMO).</i>
<b>ACDS</b>	Aeronautical Charts and Data Section (CAA)
<b>ACE</b>	Advanced Configurable EGI
<b>ACE</b>	ATM Cost-Effectiveness (EUROCONTROL Benchmarking Report)
<b>ACEA</b>	Association des Constructeurs Européens d'Automobiles <i>Represents the interests of 13 European car, truck and bus manufacturers.</i>
<b>ACEM</b>	Agence de Coopération pour l'Europe de la Mer (= ECMA)
<b>ACF</b>	autocorrelation function
<b>ACFD</b>	advanced civil flight deck
<b>ACG</b>	ATM/CNS Consultancy Group (EATCHIP - EUROCONTROL)
<b>ACI</b>	Airports Council International <i>573 members with 1,640 airports in 178 countries (2008).</i>
<b>ACK</b>	acknowledge(ment)
<b>ACM</b>	autocorrelation-matrix
<b>ACN</b>	Active Control Network (UK OS) Airspace Co-ordination Notice
<b>ACO</b>	Aircraft Certification Office
<b>ACP</b>	Airspace Change Proposal (UK CAA)
<b>ACR</b>	aerodrome control radar
<b>ACRUDA</b>	Assessment and Certification RULes for Digital Architectures (EU)

<b>ACTD</b>	advanced concept technology demo
<b>ActMAP</b>	EC project to bring real-time info to in-vehicle digital maps
<b>ACZ</b>	aerodrome control zone
<b>AD</b>	air data
	Airworthiness Directive
	<i>Issued by airworthiness authority to correct a defect found after certification. Mandatory.</i>
<b>ADA</b>	advisory area (ATC)
<b>ADACU</b>	advanced digital antenna control unit (eg for GPS steerable array)
<b>ADAM</b>	Airport Datum Management Program (US)
<b>ADAS</b>	Advanced Driver Assistance System
<b>ADC</b>	aerodrome control(ler)
	air data computer
	analogue-to-digital converter
<b>ADCC</b>	Air Defence Control Centre
<b>ADCP</b>	Acoustic Doppler Current Profiler
<b>ADD</b>	aircraft-derived data
	airstream direction detector
	average delay per delayed flight (air traffic flow management)
<b>Address Point</b>	<i>Dataset to uniquely defines &amp; locate residential, business and public postal addresses in GB. Matches info fm OS digital map databases with &gt;26 million addresses in the Royal Mail PAF.</i>
<b>ADEOS</b>	ADvanced Earth Observation Satellite (Japan)
<b>ADEXP</b>	ATS Data Exchange Protocol (EATMP)
<b>ADF</b>	automatic direction find(er)(ing)
<b>ADI</b>	attitude director indicator
<b>ADM</b>	average delay per movement (air traffic flow management)
<b>ADMAP</b>	Antarctic Digital Magnetic Anomaly Project
<b>ADN</b>	Euro Ag'ment on int carriage of dangerous goods by inland waterways
<b>ADNM</b>	Admiralty Digital Notice to Mariners
<b>ADONIS</b>	EU project to make cycling and walking safer
<b>ADPCM</b>	adaptive differential pulse code modulation
<b>ADR</b>	accident data recorder
	advisory route (ATC)
	European Agreement on intnat'l carriage of dangerous goods by road
<b>ADRIIS</b>	automatic DR indicating system
<b>ADRU</b>	Air Defence Radar Unit
<b>ADS</b>	Automatic Dependent Surveillance
<b>ADS-B</b>	Automatic Dependent Surveillance - Broadcast
	<i>Aircraft broadcast their identity, position (GNSS-based) and velocity. This can be captured by receivers on the ground (ADS-B out) or in aircraft (ADS-B in).</i>

<b>ADS-C</b>	Automatic Dependent Surveillance - Contract
<b>ADSL</b>	Asymmetric Digital Subscriber Line <i>For access to the Web using normal phone lines at speeds between 512 and 2,000 kbps.</i>
<b>ADSP</b>	Automatic Dependent Surveillance Panel (of ICAO)
<b>ADVANCE</b>	Advanced Driver & Vehicle Advisory Navigation Concept (US)
<b>ADVANTIS</b>	Project looking at integrity for liability-critical applications (GJU)
<b>AE</b>	antenna electronics
$a_e$	Earth's equatorial radius (typically $6.378 \times 10^6$ m)
<b>AEA</b>	Association of European Airlines
<b>AEEC</b>	Airlines Electronic Engineering Committee (US)
<b>AEI</b>	air experience instructor
<b>AENA</b>	Aeropuertos Españoles y Navegación Aérea (Spanish ATSP)
<b>AEP</b>	Architecture Evolution Plan <i>GPS ground control Unix-based system from Apr 07.</i>
<b>AEROSAT</b>	Aeronautical Satellite (Programme)
<b>AESIG</b>	Asociacion Espanola de Sistemas de Informacion Geografica y Territo
<b>AEW</b>	airborne early warning
<b>AF</b>	adaptive filtering
<b>AFB</b>	Air Force Base (US)
<b>AFC</b>	automatic frequency control (eg in radar)
<b>AFCI</b>	arc fault circuit interruption (to detect aircraft wiring problems)
<b>AFCS</b>	automatic flight control system
<b>AFDC</b>	autopilot flight director computer
<b>aFDPS</b>	Advanced Flight Data Processing System (precursor to SESAR)
<b>AFDS</b>	autopilot flight director system
<b>AFDX E/S</b>	aircraft full-duplex end system
<b>AFG</b>	Advisory Financial Group (EUROCONTROL)
<b>AFI</b>	assistant flying instructor automatic fault indication
<b>AFIGEO</b>	Association français pour l'Information Géographique
<b>AFIS</b>	airfield flight information service (info but not control)
<b>AFLT</b>	Advanced Forward Look Trilateration <i>To calculate position of a mobile handset on CDMA network.</i>
<b>AfOL</b>	Association for Outdoor Learning (UK)
<b>AFRAA</b>	African Airlines Association
<b>AFRIN</b>	Associate Fellow of the Royal Institute of Navigation
<b>AFS</b>	Air Force Station (US) atomic frequency standard
<b>AFSPC</b>	Air Force Space Command (USAF)
<b>AFSS</b>	automated flight service station

<b>AFTN</b>	Aeronautical Fixed Telecommunication Network
<b>AGAS</b>	Action Group for ATM Safety (EUROCONTROL) <i>Set up as high-level group as result of 1 Jul 02 mid-air collision.</i>
<b>AGC</b>	Air/Ground Cooperative (Air Traffic Services Programme) automatic gain control
<b>AGI</b>	air ground incident Association for Geographic Information (UK)
<b>AGILE</b>	Application of Galileo in the LBS environment (EC FP6 2005-07)
<b>agl</b>	above ground level
<b>AGNA</b>	Advisory Group of National Authorities (EASA)
<b>AGNIS</b>	Azimuth Guidance for Nose-in Stand (aircraft parking system)
<b>AGNSS</b>	(A-GNSS) Assisted GNSS
<b>AGO</b>	automatic geophysical observatory
<b>AGORA</b>	Implementation of Global Location Referencing Approach <i>EC telematics project Oct 2000 - Apr 2002.</i>
<b>AGPS</b>	(A-GPS) Assisted GPS
<b>AGS</b>	Association of Geotechnical and Geo-environmental Specialists
<b>AGU</b>	American Geophysical Union
<b>AHARS</b>	attitude and heading reference system
<b>AHEAD</b>	EUROCONTROL programme to develop web-based AIS
<b>AHMS</b>	Aeronautical Message Handling System (to replace AFTN in 2000+)
<b>AHRS</b>	attitude and heading reference system
<b>AHS</b>	Advanced Cruise-Assist Highway Systems (Japanese concept) automated highway system
<b>AHWG</b>	ad-hoc working group
<b>AI</b>	Accuracy and Integrity (Galileo Service) attitude indicator
<b>AIAA</b>	American Institute of Aeronautics and Astronautics area of intense aerial activity
<b>AIB</b>	Accident Investigation Board
<b>AIC</b>	Aeronautical Information Circular Automotive Information Centre (MIRA)
<b>AIDU</b>	Aeronautical Information Documents Unit (RAF Northolt)
<b>AIG</b>	Association internationale de géodésie (IAG)
<b>AIM</b>	Aeronautical Information Management autonomous integrity monitoring (eg CAIM, RAIM)
<b>AIN</b>	Arab Institute of Navigation
<b>AION</b>	Australian Institute of Navigation
<b>AIP</b>	Administrative Incentive Pricing <i>Spectrum pricing to reflect its value to the user.</i> Aeronautical Information Publication

<b>AIPA</b>	Australian & International Pilots Association
<b>AIPCN</b>	Association Internationale de Navigation (also PIANC) <i>Brussels based - www.pianc-aipcn.org.</i>
<b>AIRPROX</b>	UK term for 'airmiss'
<b>AIRS</b>	Automatic Ship Identification and Reporting System (UK)
<b>AIRWAVES</b>	Project to use GNSS in aircraft to monitor WV (EUROCONTROL)
<b>AIS</b>	Aeronautical Information Service Automatic Identification System (for shipping - IMO) <i>For ship-to-ship and ship-to-shore exchange of dynamic (inc pos, SOG, COG, hdg, ROT), static (inc MMSI, callsign, name, size, type) and voyage (inc draft, cargo, dest, ETA, route plan) data. Uses 2 VHF freqs - 161.97 and 162.025 MHz in SOTDMA channels; 1-sec frame comprises 2,250 slots each of 256 bits. Capacity ~ 4,000 reports/min.</i>
<b>AISM</b>	Association Internationale de Signalisation Maritime (IALA)
<b>AIV</b>	all in view (receiver)
<b>AIWG</b>	Airspace Infringements Working Group (CAA)
<b>AIZ</b>	aerodrome information zone
<b>AL</b>	alert limit/level <i>Max allowable error (in a measured position for example) found during integrity monitoring before an alarm is triggered.</i>
<b>ALA</b>	approach and landing accident
<b>ALAR</b>	Approach and Landing Accident Reduction (FSF initiative)
<b>ALARP</b>	as low as reasonably practicable (of risk in using a system)
<b>Alert</b>	The International Maritime Human Element Bulletin (NI & Lloyd's R)
<b>ALFENS</b>	Automated Low Flying Enquiry & Notification System
<b>ALI</b>	automatic location identification
<b>aliasing</b>	Visibly jagged steps along angled lines/edges (displays & maps)
<b>ALIVE</b>	ALert Interface Via EGNOS <i>System to broadcast warning messages (e.g. of natural disasters) in addition to the EGNOS correction signals.</i>
<b>ALL</b>	Admiralty List of Lights
<b>ALNOT</b>	Alert Notice (of aircraft overdue)
<b>along-track error</b>	<i>A position error in the direction of the intended track (IMO).</i>
<b>ALPA</b>	Air Line Pilots Association (US)
<b>ALPR</b>	automatic licence-plate recognition
<b>ALRS</b>	Admiralty List of Radio Signals
<b>ALS</b>	aerodrome lighting system
<b>AltBOC</b>	<i>Constant envelop modulation scheme for combining 2 sidebands each consisting itself of 2 binary signals (in I- and Q-channel).</i>
<b>AltBOC(n,m)</b>	<i>AltBOC with chipping rate of <math>m \times 1.023</math> Mcps and sub-carrier frequency of <math>n \times 1.023</math> MHz.</i>
<b>AM</b>	amplitude modulation ante meridian (before noon)

<b>AM/FM Europe</b>	Automated Mapping/Facilities Management - European Division
<b>AM/FM It</b>	Automated Mapping/Facilities Management - Italy
<b>AMASS</b>	Airport Movement Area Safety System (FAA) (software package)
<b>ambiguity</b>	<i>The condition obtained when one set of measurements derived from a navigation system defines more than one point, direction, LOP or surface of position (IMO).</i>
<b>AMCP</b>	Aeronautical Mobile Communication Panel (of ICAO)
<b>AMCS</b>	Alternate Master Control Station (GPS) - Vandenberg AFB
<b>AME</b>	authorised medical examiner (for aviation licences)
<b>AMI-C</b>	Automotive Multimedia Interface Collaboration (telematics standard)
<b>AMLCD</b>	active matrix liquid crystal display
<b>amphidrome</b>	<i>A point in the sea where there is zero tidal amplitude due to cancelling of tidal waves. Cotidal lines radiate from an amphidromic point and corange lines encircle it.</i>
<b>AMSA</b>	Australian Maritime Safety Agency
<b>AMSD</b>	Aircraft Maintenance Standards Department (CAA SRG)
<b>amsl</b>	above mean sea level
<b>AMSS</b>	Aeronautical Mobile Satellite Service
<b>AMTICS</b>	Advanced Mobile Traffic Info & Communication System (Japan)
<b>AMVER</b>	Automated Mutual-Assistance Vessel Rescue System (USCG)
<b>ANA</b>	area navigation approach
<b>ANASTASIA</b>	<i>Airborne New and Advanced Satellite techniques and Technologies in A System Integrated Approach (EC FP6 project)</i>
<b>ANAVnet</b>	On-line application to distribute marine warnings (IHPT)
<b>ANC</b>	Air Navigation Commission (ICAO)
<b>Android</b>	mobile phone operating system for web (Google) 2008
<b>ANMS</b>	Automated Notice to Mariners System
<b>ANO</b>	Air Navigation Order <i>Statutory legal instrument defining the laws of air navigation, pilot licensing etc in UK.</i>
<b>ANP</b>	actual navigation performance
<b>ANPA</b>	Advanced Notice of Proposed Amendment (JAR-OPS)
<b>ANPAC</b>	Associazione Nazionale Piloti Aviazione Commerciale (It pilots Assoc)
<b>ANPCAT</b>	ATCOs' union in Italy
<b>ANPR</b>	automatic number plate recognition
<b>ANR</b>	active noise reduction
<b>ANSEP</b>	Air Navigation Services Economics Panel (ICAO)
<b>ANSI</b>	American National Standards Institute
<b>ANSP</b>	air navigation service provider
<b>ANT</b>	Airspace and Navigation Team (EUROCONTROL) antenna



<b>AOA</b>	Airport Operators Association angle of arrival
<b>AOB</b>	angle of bank
<b>AOC</b>	Advanced Operational Capability aerodrome/airport obstruction chart aeronautical operational control (US military) Air Operator's Certificate aircraft operations centre airline operational control airline operations communications auxiliary output chip
<b>AOM</b>	aircraft operating manual
<b>AOO</b>	area of operations
<b>AOPA</b>	Aircraft Owners and Pilots Association
<b>AOR</b>	Atlantic Ocean Region (-E or -W) (of Inmarsat III satellites) <i>AOR-E at 15.5°W, AOR-W at 54°W but moving to 98°W in early 05.</i>
<b>AP</b>	access point air position Air Publication (RAF) (AP3456 covers navigation) assumed position (estimated pos'n for astronomical sight reduction) autopilot
<b>APAC</b>	Asia and Pacific (ICAO area)
<b>APAPI</b>	abbreviated precision approach path indicator
<b>APC</b>	airline passenger correspondence (eg e-mail, internet, phone) approach control(ler) (ATC)
<b>API</b>	air position indicator application programming interface
<b>APL</b>	Advanced Positioning Layer (LBS) airport pseudolite
<b>APOLO</b>	Advanced POsition LOcator (train location system using GNSS)
<b>APP</b>	approach (control)
<b>APR</b>	approach control radar
<b>APRS</b>	automatic position reporting system
<b>APTS</b>	Advanced Public Transport System
<b>APU</b>	auxiliary power unit
<b>APV-I</b>	Approach with Vertical Guidance - 1 (to runway) <i>Requires accuracies (95%) of 220 m H, 20 m V. HAL 556 m, VAL 50 m. Time to alert 10 s. Definition may be changed by FAA in 2002 -03.</i>
<b>APV-II</b>	Approach with Vertical Guidance - 2 (to runway) <i>Requires accuracies (95%) of 16 m H, 8 m V. HAL 40 m, VAL 20 m. Time to alert 6 s.</i>

<b>AR</b>	augmented reality (VR images overlaid on the real world) autoregressive (form of Kalman filter)
<b>ARA</b>	airspace restricted area
<b>ARB</b>	Airworthiness Requirements Board (CAA)
<b>ARC</b>	Atlantic Rally for Cruisers
<b>ARCC</b>	Aeronautical Rescue Co-ordination Centre Associated Rescue Co-ordination Centre <i>Centre nominated by national SAR agency to which CES normally routes distress calls.</i>
<b>ARCS</b>	Admiralty Raster Chart Service automatic route control system
<b>ARFCN</b>	Assigned Radio Frequency Channel (GSM)
<b>ARINC</b>	Aeronautical Radio Inc (now just called 'ARINC') <i>US avionics standards-setting body whose standards are accepted world-wide.</i>
<b>ARKTRANS</b>	Norwegian ITS architecture
<b>ARM</b>	Series of processor cores from ARM Ltd
<b>ARMAS</b>	Active Road Management Assisted by Satellite (ESA project)
<b>ARN</b>	ATS Route Network
<b>ARNS</b>	Aeronautical RadioNavigation Service (of allocated spectrum bands)
<b>ARP</b>	aerodrome reference point
<b>ARPA</b>	automatic radar plotting aid
<b>ARPU</b>	annual/average revenue per user/unit (of eg a telematics service)
<b>ARSR</b>	air route surveillance radar
<b>ARTCC</b>	air route traffic control centre (US; ACC internationally)
<b>ARTEMIS</b>	Advanced Relay and TEchnology MIission Satellite (ESA) <i>Planned to carry EGNOS navigation payload from mid-2001; actually achieved orbit in Jan 2003. 21.5°E.</i>
<b>ARTES</b>	Advanced Research in TElecommunications Systems <i>ESA initiatives. Element 9 involves development work for GNSS.</i>
<b>ARTIST</b>	Austrian Radionav Tech & Integrated Sat Nav Servs & Products Italian ITS architecture
<b>ARU</b>	aircraft retained unit (piece of aircrew equip that stays with the ac)
<b>ARW</b>	angular random walk (of a gyro)
<b>As</b>	altostratus cloud
<b>AS</b>	anti-spoofing <i>Method of protecting against hostile imitation of signals - eg GPS PPS</i> aviation safety
<b>ASAB</b>	Association of Animal Behaviour
<b>ASAP</b>	Aviation Safety Action Programme
<b>ASAS</b>	Airborne Separation Assurance System

<b>ASCII</b>	American Standard Code for Information Interchange <i>Comprises letters, digits and special characters each represented by 8 bits or 1 byte.</i>
<b>ASDE</b>	airport surface detection equipment (radar) (can feed AMASS)
<b>ASDO</b>	automatic selective door operation (rail)
<b>ASE</b>	altimetry system error
<b>ASECAP</b>	<i>Association Européenne de Concessionnaires d'Autoroutes et d'Ouvrages à Péage</i>
<b>ASF</b>	additional secondary factor (cause of Loran sig delay - also PF & SF) Air Safety Foundation (of the US AOPA)
<b>ASI</b>	Agenzia Spaziale Italiana (Italian National Space Agency) Airspace and Safety Initiative (UK CAA) airspeed indicator
<b>ASIC</b>	application-specific integrated circuit <i>An IC designed or adapted for a specific application.</i>
<b>ASK</b>	available seat kilometres (a measure of civil available air capacity)
<b>asl</b>	above sea level
<b>ASL</b>	application simulation level
<b>ASM</b>	airspace management
<b>ASMGCS</b>	Advanced Surface Movement Guidance and Control System (airfield)
<b>ASMI</b>	airfield surface movement indicator
<b>ASMS</b>	advanced satellite mobile system (future comms)
<b>ASOS</b>	Automated Surface Observation System (US - air)
<b>ASP</b>	application service provider average selling price
<b>ASQF</b>	Application Specific Qualification Facility (EGNOS - Torrejon)
<b>ASR</b>	airport/airfield surveillance radar altimeter setting region aviation safety report
<b>ASR-WSP</b>	airport surveillance radar - weather systems processor (FAA)
<b>ASRS</b>	Aviation Safety Reporting System (NASA)
<b>Assignment</b>	<i>Authorisation given by a licensing authority for a radio station to use a specific radio frequency or channel under specified conditions.</i>
<b>ASSIST</b>	Alpine Safety, Security & Informational Services & Technologies
<b>ASSP</b>	Application Specific Standard Product <i>IC dedicated to one specific application (like a custom IC) but with several possible customers (unlike a custom IC).</i>
<b>ASTE</b>	Advanced System Telecommunication Equipment programme (ESA)
<b>ASTRA</b>	Application of Space Techniques Related to Aviation

<b>ASTRAEA</b>	Autonomous Sys Technology Related Airborne Eval & Assessment <i>Project to develop the next-generation of UAVs for civil applications.</i>
<b>ASTRON</b>	Applications on the Synergy of Earth Obs with Sat Telecoms & Nav <i>Under EC 5th Framework RTD Programme.</i>
<b>Astronomical lat</b>	<i>Angular distance between the plane of the celestial equator and the point's plumb line.</i>
<b>Astronomical lon</b>	<i>Angle between the plane of the prime meridian and the plane of the point's celestial meridian.</i>
<b>ASV</b>	Advanced Safety Vehicle (Japanese concept)
<b>AT</b>	atomic time
<b>AT-VASIS</b>	Abbreviated 'T' Visual Approach Slope Indicator System
<b>ATA</b>	actual time of arrival
<b>ATA</b>	Air Transport Alliance (EU) Air Transport Association (US) automatic tracking aid
<b>ATAG</b>	Air Transport Action Group <i>Industry lobby gp, 80 members funded by IATA, Boeing and Airbus.</i>
<b>ATC</b>	adaptive tightly-coupled (eg GPS/INS integration) air traffic control automatic train control
<b>ATC EUC</b>	Air Traffic Control European Union Co-ordination (~8,000 ATCOs)
<b>ATCAA</b>	air traffic control assigned airspace
<b>ATCC</b>	air traffic control centre
<b>ATCO</b>	air traffic control officer
<b>ATCRBS</b>	Air Traffic Control and Radar Beacon System
<b>ATCRU</b>	air traffic control radar unit
<b>ATD</b>	actual time of departure
<b>ATE</b>	along track error automatic test equipment
<b>ATF</b>	adaptive transversal filter (eg for minimising jamming signals)
<b>ATFM</b>	air traffic flow management
<b>ATIS</b>	advanced traveller information system Alliance for Telecommunications Industry Solutions (US) automatic terminal information station/service <i>Continuous broadcast of routine non-control aerodrome information.</i>
<b>ATK</b>	available tonne kilometres <i>Measures air available total capacity (combined passenger and cargo).</i>
<b>ATLAS</b>	Airborne Topographic Laser System (QinetiQ)
<b>ATLB</b>	Air Transport Licensing Board
<b>ATM</b>	aerodrome traffic monitor

	air traffic management <i>ATM2000 is EUROCONTROL's 'gate-to-gate' strategy initiative to 2015.</i>
<b>Atmosphere</b>	Shell round earth extending to height of 350 km <i>Comprises troposphere, stratosphere, mesosphere, thermosphere and ionosphere.</i>
<b>ATMS</b>	advanced traffic management system
<b>ATMSP</b>	Air Traffic Management Service Provider <i>eg: AENA - Spain, ANA - Portugal, DFS - Germany, DGAC - France, ENAV - Italy, NATS - UK.</i>
<b>ATMWG</b>	Air Traffic Management Working Group (IATA)
<b>ATN</b>	Aeronautical Telecommunications Network
<b>ATOL</b>	Association of Tour Operators and Leaders
<b>AtoN</b>	(ATON) aid(s) to navigation
<b>ATOP</b>	Advanced Technologies and Oceanic Procedures (FAA)
<b>ATP</b>	Allied Tactical Publication (NATO) Automatic Train Protection (UK signalling safeguard)
<b>ATPI</b>	Along the Track Protection Interval (trains)
<b>ATPL</b>	Air Transport Pilot's Licence
<b>ATR</b>	Air Transport Racking (ARINC) <i>A standard size for avionics boxes. All 10 ins high, full ATR 10 ins wide, half ATR 5 ins wide etc.</i>
<b>ATS</b>	air traffic service Aircrew Training System (USAF)
<b>ATSA</b>	air traffic service assistant
<b>ATSB</b>	Australian Transport Safety Board
<b>ATSI</b>	air traffic services investigations
<b>ATSIN</b>	Air Traffic Services Information Notice (CAA)
<b>ATSOCAS</b>	air traffic services outside controlled airspace
<b>ATSP</b>	Air Traffic Service Provider
<b>ATSU</b>	air traffic service unit
<b>ATT</b>	Admiralty Tide Tables advanced transport telematics
<b>ATTS</b>	advanced transport telematics system
<b>ATZ</b>	aerodrome traffic zone <i>Usually 2 or 2.5 n miles radius up to 2,000ft aal.</i>
<b>AU</b>	astronomical unit
<b>AUC</b>	Air Transport Users' Council (UK CAA - 12-20 members)
<b>augmentation</b>	<i>Any technique of providing enhancement in order to provide improved navigation performance to the user (IMO).</i>
<b>AUGUR</b>	A predictive GPS receiver autonomous integrity monitoring system <i>EUROCONTROL.</i>
<b>AUM</b>	all-up mass (aircraft)

<b>AUTM</b>	Authorised Unusable Time (NELS Loran-C - see also UTM and EUTM) <i>Scheduled and authorised UTM with at least 72 hrs of notice.</i>
<b>AutoBAHN</b>	Pinpoint project towards millimetre accurate real-time positioning <i>Newcastle University &amp; LogicaCMG.</i>
<b>AUTS</b>	additional user terminal sensor (GNSS)
<b>AUV</b>	autonomous underwater vehicle
<b>AUW</b>	all-up weight (aircraft)
<b>availability</b>	<i>The percentage of time that an aid, or system of aids, is performing a required function under stated conditions (IMO).</i> <i>Signal availability - of a radio signal in a specified coverage area.</i> <i>System availability - of a system to a user, including signal availability and the performance of the receiver.</i>
<b>AVC</b>	automatic vehicle classification
<b>AVCS</b>	advanced vehicle control system
<b>AVG</b>	automatic vehicle guidance
<b>avgas</b>	aviation gasoline (for piston aircraft)
<b>AVI</b>	automatic vehicle identification
<b>AVIC</b>	audio, video, information and communication (eg for aircraft pax)
<b>AVID</b>	Added Value Information Dissemination (EU project)
<b>AVL</b>	automatic vehicle location
<b>AVLS</b>	automatic vehicle location system
<b>AVM</b>	automatic vehicle monitoring
<b>AVOL</b>	aerodrome visibility operational level
<b>AVT</b>	Applied Vehicle Technology Panel (NATO RTO)
<b>avtur</b>	aviation turbine fuel (kerosine) (for jets/turboprops)
<b>AWAC</b>	airborne warning & control
<b>AWARE</b>	Advanced Weather and Reporting Enhancements <i>Tool being developed by NASA to present better weather info for GA pilots.</i>
<b>AWDS</b>	Automated Weather Distribution System
<b>AWG</b>	aural warning generator
<b>AWGAS</b>	Aerial Work & General Aviation Sub-Ctee (JAA)
<b>AWGN</b>	additive white Gaussian noise
<b>AWN</b>	Aviation Weather Network (US)
<b>AWNIS</b>	Allied Worldwide Navigational Information System <i>Classified NATO navigational warning system.</i>
<b>AWO</b>	all-weather operations
<b>AWOP</b>	All-Weather Operations Panel (ICAO)
<b>AWOS</b>	Automated Weather Observing System
<b>AWP</b>	automated weather processor
<b>AWPR</b>	automatic waypoint reporting
<b>AWR</b>	airborne weather radar

<b>AWS</b>	Automatic Warning System (UK railways)
<b>Awy</b>	airway
<b>az</b>	azimuth
<b>B-band</b>	NATO radar band 250-500 MHz = 1.2-0.6 m
<b>B-Call</b>	breakdown call (GPT)
<b>B-GAN</b>	Broadband Global Area Network (432 kbps on Inmarsat I-4)
<b>B-RNAV</b>	basic area navigation <i>ICAO definition - having a nav performance equal to or better than a track-keeping accuracy of <math>\pm 5</math> NM 95% of time.</i>
<b>B2B</b>	business-to-business (electronic commerce)
<b>BA</b>	British Admiralty British Airways
<b>BAA</b>	British Airports Authority
<b>BABS</b>	Blind Approach Beacon System (1941)
<b>BAFEGIS</b>	Baltic Ferry Guidance and Information System
<b>BALPA</b>	British Air Line Pilots Association
<b>BANET</b>	Baltic & N Sea ECDIS Test-Bed
<b>BAPE</b>	best available position estimate
<b>baroclinic</b>	<i>Atmospheric condition in which isobaric and constant-density surfaces are not parallel. In the ocean when surfaces of constant pressure intersect surfaces of constant density.</i>
<b>barotropic</b>	<i>A state in a water mass in which the surfaces of constant pressure are parallel to the surfaces of constant density.</i>
<b>BATA</b>	British Air Transport Association
<b>BATCU</b>	ATCOs' union in Bulgaria
<b>bathymetry</b>	The charting of the ocean floor by taking soundings
<b>BAUA</b>	Business Aircraft Users Association (UK)
<b>baud</b>	rate of transfer of binary messages <i>1 baud = 1 bit per second for most purposes.</i>
<b>BB</b>	baseband Brown Box (Europort pilot portable radio navigation system)
<b>BBAC</b>	British Balloon and Airship Club
<b>BBKMF</b>	Black Box Key Management Facility (Galileo)
<b>BBP</b>	beam bend potential (ILS)
<b>BC</b>	patches (met)
<b>BC Code</b>	Code of Safe Practice for Solid Bulk Cargoes (IMO)
<b>BCAR</b>	British Civil Air Requirements
<b>BCAS</b>	beacon-based collision avoidance system
<b>BCBP</b>	bar coded boarding pass (IATA - full implementation by 2010)
<b>BCCH</b>	broadcast control channel (GSM phones)
<b>BCD</b>	binary code decimal
<b>BCH</b>	broadcast channel (phone network)

<b>bcn</b>	(BCN) BeaCoN
<b>BCR</b>	bow crossing range
<b>BCS</b>	beacon control system (marine) British Cartographic Society
<b>BCT</b>	bow crossing time
<b>BCU</b>	British Canoe Union
<b>BDIS</b>	Bus Departure Information System
<b>BEA</b>	Bureau Enquêtes-Accidents (French AAIB)
<b>BECMG</b>	becoming (met)
<b>BEDMAP</b>	Antarctic Bedrock Mapping Project
<b>Beidou</b>	Chinese GNSS (means 'Big Dipper') <i>Also known as Twinstar Rapid Positioning System. 2 sats in geosynchronous orbits, may be joined by 2 more or may become a full constellation (also known as 'Compass').</i>
<b>BER</b>	bit error rate
<b>BERR</b>	Dept for Business, Enterprise and Regulatory Reform (UK fm Jun 07)
<b>BEST</b>	Beginning-to-End for Simulation and Training <i>NATS ATC simulation system for NERC.</i>
<b>BFO</b>	beat frequency oscillator
<b>BFU</b>	Bundesstelle für Flugunfalluntersuchung (German AAIB)
<b>BGA</b>	British Gliding Association
<b>BGD</b>	broadcast group delay
<b>BHAB</b>	British Helicopter Advisory Board
<b>BHPA</b>	British Hang Gliding and Paragliding Association
<b>BIAS</b>	Bus Information and Signalling System
<b>BiCMOS</b>	Combined CMOS & bipolar trans for logic & memory on the same chip
<b>BIGF</b>	British Isles GPS (archive) Facility (NERC)
<b>BIH</b>	Bureau International de L'Heure
<b>BIIT</b>	built-in integrity test
<b>Bimco</b>	Baltic and International Maritime Council
<b>BINA</b>	British Isles/North America (eg ERS)
<b>BIPM</b>	Bureau International des Poids et Mesures (under CGPM)
<b>bit</b>	binary digit <i>A single unit of binary data.</i>
<b>BIT</b>	built-in test
<b>BKN</b>	broken cloud (5 to 7 oktas)
<b>BL</b>	blowing (met)
<b>BLA</b>	bi-lateral agreement
<b>black-box testing</b>	Testing that ignores internal workings and structure of a component <i>See white-box testing.</i>



<b>Block</b>	Batch of GPS satellites made to a common standard <i>BlockII/IIA from Feb 89; 28 launched. Block IIR from Jul 97. Block IIF from 2006, 12 (was 33) in programme, to transmit L5.</i>
<b>BLUE</b>	best linear unbiased estimate
<b>Bluetooth</b>	Specification for wireless comms between terminals & peripherals <i>Up to 10 metres using 2.4 GHz at 720 kbps. Promoted by Ericsson, IBM, Intel, Nokia &amp; Toshiba. Named after 10th century Viking king.</i>
<b>BM</b>	base model
<b>BMAA</b>	British Microlight Aircraft Association
<b>BMC</b>	British Mountaineering Council
<b>BMEA</b>	British Marine Equipment Association
<b>BMIF</b>	British Marine Industries Federation Ltd
<b>Bn</b>	beacon
<b>BNEA</b>	British Naval Equipment Association
<b>BNS</b>	Brunel Navigation System (for visually impaired pedestrians)
<b>BNSC</b>	British National Space Centre
<b>BNTS</b>	Beidou Navigation Test Satellite (China)(first 2 launched Oct 00)
<b>BOC</b>	binary offset carrier <i>A form of modulation using a sine-shaped sub-carrier modulated at the required data rate. Referred to as BOC (n,m) where n = subcarrier freq and m = code chipping rate. Used in GPS M-code and Galileo.</i>
<b>BOCc</b>	binary offset carrier using cosine-shaped sub-carrier
<b>BOD</b>	bearing origin to destination
<b>BOM</b>	bill of material
<b>BOSCA</b>	British Oil Spill Control Association
<b>BOSS</b>	Broad Ocean Surveillance System (US - out to 2,000 NM)
<b>BOSVA</b>	British Offshore Support Vessel Owners Association
<b>BOW</b>	basic operating weight (everything except payload)
<b>BPA</b>	British Parachute Association British Ports Association (Trade association representing ~ 87 ports)
<b>BPEO</b>	Best Practicable Environmental Option
<b>BPL</b>	Basic Positioning Layer (LBS)
<b>BPR</b>	bottom pressure recorder Brinnenvaart Politie Reglement (Dutch derivative of CEVNI)
<b>bps</b>	bits per second
<b>BPSK</b>	bipolar (or binary) phase shift keying
<b>BPSK(m)</b>	BPSK using a chipping rate of $m \times 1.023 \text{ Mcps}$
<b>BR</b>	mist (met)
<b>brg</b>	bearing
<b>BRNAV</b>	basic area navigation (en route)
<b>BROA</b>	British Rig Owners Association

<b>BS</b>	British Standard broadband services
<b>BS EN</b>	British Standards European Norm
<b>BSH</b>	Bundesamt für Seeschifffahrt und Hydrographie (German HO)
<b>BSI</b>	British Standards Institution
<b>BSI/EN/ISO</b>	tri-numbered standard (British/European/International)
<b>BSIC</b>	base station identification code (GSM)
<b>BST</b>	British Summer Time
<b>BT</b>	British Telecom
<b>BTS</b>	base transceiver station (phone network) Bureau of Transportation Statistics (US)
<b>BV</b>	Bureau Veritas (classification society)
<b>BWB</b>	British Waterways Board
<b>BWC</b>	bearing and distance to waypoint (great circle)
<b>BWEA</b>	British Wind Energy Association
<b>BWPA</b>	British Women Pilots' Association
<b>BWR</b>	bearing and distance to waypoint (rhumb line)
<b>BWW</b>	bearing waypoint to waypoint
<b>By</b>	buoy
<b>byte</b>	binary word (often of 8 bits)
<b>c</b>	centi (SI unit multiplier of $10^{-2}$ ) speed of light in vacuo ( $2.997\,924\,590 \times 10^8 \text{ m s}^{-1}$ )
<b>C</b>	°Celsius
<b>C GNSS</b>	GNSS radio signals in C-band
<b>C of A</b>	Certificate of Airworthiness (issued by CAA in UK)
<b>C of C</b>	Certificate of Conformity (usually of equipment)
<b>C-band</b>	NATO radar band 0.5-1 GHz = 60-30 cm Old radar band 4-8 GHz = 7.5-3.75 cm ( <i>ITU assigned 5,250-5,925 MHz</i> ).
<b>C-TPAT</b>	Trade Partnership Against Terrorism (US)
<b>C/A</b>	Coarse Acquisition code (of GPS) <i>Family of PRN codes, one of 32 allocated to each satellite. Each code has 1,023 chips sent at 1.023 Mbps, repeating every ms.</i>
<b>C/No</b>	(C/N) carrier-to-noise power density <i>Ratio of power level of a signal carrier to the noise power in a 1 Hz bandwidth.</i>
<b>c/s</b>	callsign
<b>C&amp;SMWG</b>	Colours & Symbols Maintenance Working Group (of IHO CHRIS)
<b>C&amp;V</b>	corrections and verification (WAAS software)
<b>C4ISR</b>	<i>Command, Control, Communications, Computers, Intelligence, Surveillance &amp; Reconnaissance.</i>
<b>CA</b>	Coordination Action (EU FP6)

<b>CAA</b>	Cargo Airlines Association (US) Civil Aviation Authority (UK)
<b>CAAC</b>	Civil Aviation Administration of China
<b>CAASD</b>	Center for Advanced Aviation System Development (MITRE US)
<b>CAATS</b>	Canadian Automated Air Traffic System
<b>cable</b>	1/10th nautical mile ~ 185.2 m
<b>CABSINET</b>	Cellular Access to Broadband Services and Interactive Television
<b>CACS</b>	comprehensive automobile traffic control system
<b>CAD</b>	computer-aided design computer-aided dispatch (system)
<b>CADC</b>	central air data computer
<b>CADRT</b>	computer-aided dead reckoning tracer (part of SCDS - USN)
<b>CAE</b>	computer-aided engineering
<b>CAeM</b>	Committee for Aeronautical Meteorology (WMO)
<b>CAEP</b>	Committee on Aviation Environmental Protection (ICAO)
<b>CAGR</b>	compound annual growth rate
<b>CAIC</b>	configurable avionics interface card
<b>CAIM</b>	craft autonomous integrity monitoring
<b>CAIV</b>	cost as an independent variable
<b>CALDOVREP</b>	Dover Mandatory Reporting System
<b>CALF</b>	Chart Amendment - Low Flying
<b>CALM</b>	catenary anchor leg mooring
<b>CAM</b>	computer-aided manufacture
<b>CAMELOT</b>	Coastal Area Modelling for Engineering in the Long-Term (MAFF)
<b>CAMUS</b>	an in-vehicle data bus
<b>CAN</b>	controller area network (in-vehicle data link protocol)(EN 50325-1)
<b>CANopen</b>	Application layer & comms profile for CAN-based networks <i>Specified in prEN 50325-4.</i>
<b>CANP</b>	Civil Aviation Notification Procedure (for low-level flying)
<b>CANPA</b>	constant-angle precision approach (air)
<b>CANSO</b>	Civil Air Navigation Services Organisation
<b>CAO</b>	Coordinating Agency Office (NELS)(Oslo, Norway)
<b>CAP</b>	central alerting post Civil Aviation Publication Condition Assessment Programme (survey) controller access parameter (SSR Mode S)
<b>CAPA</b>	Coalition of Airline Pilots' Associations (US)
<b>Capstone</b>	FANS ADS-B system implemented in Alaska from early 2001
<b>CARAD</b>	Civil Aerospace Research and Development (Programme) (DTI)
<b>CARAT</b>	CNS Appl'n for Intern'l & Regional Airp'ts App, Lndg & Dep Traffic
<b>CARDME</b>	Concerted Action on Road Demand Management in Europe

<b>CARIN</b>	Car Information and Navigation System <i>Autonomous in-car route guidance system from Philips.</i>
<b>CARPILOT</b>	An autonomous in-car navigation system <i>Uses DR and map-matching. Netherlands.</i>
<b>CARS 21</b>	Competitive Automotive Regulatory System for the 21st Century - EC
<b>CAS</b>	calibrated/corrected airspeed <i>IAS corrected for air density and compressibility.</i> collision avoidance system Conditional Assessment Scheme <i>An enhanced additional inspection scheme specially developed to detect structural weaknesses in single-hull tankers.</i> Controlled Access Service (of Galileo - for registered users only) <i>CAS 1 has guaranteed performance for commercial applications.</i> <i>CAS 2 is certifiable for safety-of-life and security-related applications, eg SAS and GAS.</i>
	controlled airspace
<b>CASC</b>	China Aerospace Science & Technology Corporation
<b>CASCADE</b>	EUROCONTROL prog to implement initial ADS-B applications
<b>CASE</b>	Collaborative Awards in Science and Engineering (fund PhD students)
<b>CASIMO</b>	European air traffic modernisation prog (>50 projects)
<b>CASITAF</b>	CNS/ATM Systems Implementation Task Force
<b>CASST</b>	Commercial Aviation Safety Strategy Team (FAA)
<b>CAT</b>	clear-air turbulence commercial air transport <i>Scheduled/non-scheduled passenger flights in airliners and helicopters.</i> <i>Cargo flights.</i>
<b>CAT I</b>	Category (of ILS service) <i>Precision runway approach to height above touchdown of not less than 200 ft and RVR not less than 2,400 ft (with touchdown &amp; centreline lights 1,800 ft (A,B or C) or 2,000 ft (D)). Requires accuracies (95%) of 16 m H, 4-6 m V. HAL 40 m, VAL 10-15 m. Time to alert 6 s.</i>
<b>CAT II</b>	Category (of ILS service) <i>Precision runway approach to height above touchdown of not less than 100 ft and RVR not less than 1,200 ft. Requires accuracies (95%) of 6 m H, 1 m V. Time to alert 1 s.</i>
<b>CAT III</b>	Category (of ILS service) <i>Precision runway approach - no decision height minimum and RVR not less than: A 700 ft, B 150 ft, C no minimum. Requires accuracies (95%) of 6 m H, 1 m V. Time to alert 1 s.</i>
<b>CATCU</b>	ATCOs' union in Croatia
<b>CATRIV</b>	Conceptual Analysis for Transportation on Rivers (EU)
<b>Cave Review</b>	Review of UK radio spectrum management by Prof Cave (March 2002)
<b>CAVOK</b>	'cav-okay' - ceiling and visibility OK <i>Basically visibility at least 10km and no cloud below 5,000ft.</i>

<b>CAVU</b>	ceiling and visibility unlimited <i>Cloudless or scattered cloud and visibility over 10km.</i>
<b>CB</b>	compass bearing (angular distance from CN to the object)
<b>Cb</b>	cumulonimbus cloud
<b>CBA</b>	cost benefit analysis (B) = business, (S) = society
<b>CBI</b>	computer-based information
<b>CBM</b>	conventional buoy marking
<b>CBT</b>	computer-based training
<b>CbyC</b>	Correctness by Construction <i>Ultra low defect software approach for critical applications.</i>
<b>CC</b>	chronometer correction <i>The amount that must be added algebraically to the chronometer time to obtain UT.</i>
	compass course <i>Intended direction of movement (of the ship), defined by the angle between compass north and the fore-and-aft line (of the ship), expressed in angular units from compass north (000°).</i>
<b>CCAMS</b>	Code Assignment and Management System <i>EUROCONTROL solution to SSR code shortage. Jan 07.</i>
<b>CCB</b>	Control Centre Brest (NELS)
<b>CCC</b>	Carrier Container Council
	central control system
<b>CCD</b>	charge coupled device
	cursor control device
<b>CCF</b>	Central Control Facility (EGNOS)
	common cause failure
	Constellation Control Facility (Galileo)
	cross-correlation function
<b>CCG</b>	Canadian Coast Guard
<b>CCIR</b>	International Radio Consultative Committee (of ITU) <i>Now called ITU-R.</i>
<b>CCITT</b>	International Consultative Ctee on Telephony and Telegraphy (of <i>Now called ITU-T.</i>
<b>CCO</b>	Certificate in Coaching Orienteering (L2CCO is Level 2)
<b>CCRI</b>	capacitively coupled resistivity imaging
<b>CCS</b>	China Classification Societies
	complex conjugate symmetric (often refers to signal filters)
<b>CCSDS</b>	Consultative Committee on Space Data Standards
<b>CCW</b>	coded continuous-wave
	coherent continuous-wave
	counter-clockwise
<b>CCZ</b>	coastal confluence zone

	congestion charging zone
CD	chart datum
	compact disk
cd	SI unit of intensity of light
CD-R	compact disk - recordable
CD-ROM	compact disk - read-only memory
CD-RW	compact disk - re-writable
CDA	continuous descent approach (air)
CDED	Canadian Digital Elevation Data
CDGPS	Canada-wide Differential GPS
CDI	course deviation indicator
CDL	code delay line (GNSS rx)
	collision danger line (VCASS)
	configuration deviation list (associated with MEL)
CDLC	cellular data link control
CDM	collective decision making (ATC)
CDMA	code division multiple access
CDR	critical design review
CDS	collision danger sector (VCASS)
CDTI	cockpit display of traffic information (in ADS-B)
CDU	control and display unit
CE	total compass error correction
	<i>Sum of Var and Dev. Angle between TN and CN, from TN eastwards named E (+), westwards named W (-).</i>
CEATS	Central European Air Traffic Services (based in Vienna from 2006)
cec	centicycle (1/100th of a cycle)
CEC	Certificate of Equivalent Competency (maritime)
CEDEX	Centro de Estudios y Experimentación de Obras Públicas (Spain)
CEECs	Central and Eastern European countries
CEGRN	Central European GPS Reference Network
	<i>Over 90 sites in 14 countries 2007. Gives accuracy of 2-4 mm horizontal and 4-8 mm vertical.</i>
CEI	Central European Initiative (Scientific programme with 17 nations)
cel	centilane (1/100th of a lane)
celestial horizon	<i>Circle of the celestial sphere formed by the intersection of the celestial sphere and a plane through the centre of the earth and perpendicular to the zenith-nadis line.</i>
Cell-ID	network cell identification (cellphone positioning)
	<i>Accuracy of 250 m - 10 km.</i>
CEMT	Confederation of European Maritime Technology Societies
	<i>Independent confederation of professional societies from France, Greece, Italy, Netherlands, Portugal, Poland, Spain &amp; UK.</i>

<b>CEN</b>	Comité Européen de Normalisation <i>European standards body for IT.</i>
<b>CENC</b>	China-Europe GNSS Technical Training and Cooperation Centre
<b>CENELEC</b>	Comité Européen de Normalisation Electrotechnique <i>European Committee for Electrotechnical Standardisation. Central Secretariat based in Brussels.</i>
<b>CEO/JRC</b>	Centre for Earth Observations/Joint Research Centre
<b>CEP</b>	circular error probable <i>The radius of a circle, centred at the measured position, inside which the true position lies with 50% probability. For GPS, CEP = 0.83 x UERE x HDOP.</i>
	Committee for Environmental Protection
<b>CEPT</b>	Conference of European Postal Telecommunications Administrations
<b>CER</b>	Community of European Railways
<b>CERCO</b>	Comité Européen des responsables de la cartographie officielle
<b>CERGOP</b>	Central European Region Geodynamics Project (CEI) <i>Phase 1 concluded 1998 led to CEGRN. CERGOP-2 from 2000.</i>
<b>CES</b>	coast earth station (same as LES operationally)
<b>CESA</b>	Committee of EU Shipbuilders' Associations
<b>CESAR</b>	Certification Policies, Procedures & Requirements <i>For satellite-based navigation and landing systems and corresponding research activities.</i>
<b>CEST</b>	Centre for Exploitation of Science and Technology
<b>CETRF</b>	Central European Terrestrial Reference Frame
<b>CEV</b>	Centre d'Essais en Vol (French national flight test centre)
<b>CEVNI</b>	Code Européen de Voie de la Navigation Intérieur <i>The rules for inland waters of mainland Europe.</i>
<b>CF</b>	compact flash (memory card - typically up to 640 Mb) course to a fix
<b>CFAR</b>	constant false alarm rate (eg radar)
<b>CFCA</b>	Community Fisheries Control Agency (EU)
<b>CFI</b>	certified flight instructor (US) chief flying instructor (UK)
<b>CFIT</b>	controlled flight into terrain <i>When an airworthy aircraft under the control of the flight crew is flown unintentionally into terrain, obstacles or water, usually with no prior awareness by the crew.</i>
<b>CFMU</b>	Central Flow Management Unit
<b>CFR</b>	Code of Federal Regulations (US)
<b>CG</b>	Coastguard
<b>CGAS</b>	Coast Guard Air Station (US)
<b>CGOM</b>	Consultative Group on Ocean Mapping (IOC)

<b>CGPM</b>	Conférence Général des Poids et Mesures (Paris) <i>Authorised by the Convention of the Metre in Paris in 1875. Now 51 signatories.</i>
<b>CGPS</b>	continuous GPS (station)
<b>CGS</b>	Civil GPS Service
<b>CGSIC</b>	Civil GPS Service Interface Committee
<b>CGU</b>	code generation unit (GNSS rx)
<b>Ch</b>	Channel
<b>CH</b>	compass heading <i>Actual direction in which the longitudinal axis (of the ship) is pointed, defined by the angle between compass north and the fore-and-aft line (of the ship), expressed in angular units from compass north (000°).</i>
<b>CHA</b>	Competent Harbour Authority
<b>CHAIN</b>	Controlled and Harmonised Aeronautical Information Network <i>For improving quality of aeronautical data (EUROCONTROL).</i>
<b>CHAPI</b>	carrier helicopter approach path indicator
<b>Chayka</b>	Russian LORAN-C system
<b>chip</b>	binary element or digit that conveys no information
<b>CHIRP</b>	Confidential Human Factors Incident Reporting Procedure (UK CAA)
<b>CHO</b>	Cooperating Hydrographic Office (of RENC)
<b>CHP</b>	Civil Hydrography Programme
<b>CHRIS</b>	Ctee on Hydrographuc Requirements for Information Systems (IHO)
<b>CHS</b>	Canadian Hydrographic Service
<b>Ci</b>	cirrus cloud
<b>CI</b>	cell identity number (phone network) confidence interval (statistics)
<b>CIAIAC</b>	<i>Comision de Investigacion de Accidentes e Incidentes de Aviacion Civil of Spain.</i>
<b>CIC</b>	cave instructor certificate
<b>CID</b>	Cell ID (mobile phones)
<b>CIDIN</b>	Common ICAO Data Interchange Network
<b>CIL</b>	Commissioners of Irish Lights (known as Irish Lights) <i>Covers all of Ireland.</i>
<b>CILT(UK)</b>	The Chartered Institute of Logistics and Transport in the UK <i>Was ILT until May 2004.</i>
<b>CIN</b>	China Institute of Navigation
<b>CIPM</b>	Comité International des Poids et Mesures (under CGPM)
<b>CIR</b>	channel impulse response cockpit image recorder
<b>CIRM</b>	Comité International Radio-Maritime
<b>CIS</b>	Commonwealth of Independent States
<b>CISC</b>	complex instruction set computer



<b>CISPR</b>	International Special Committee on Radio Interference
<b>CIT</b>	Chartered Institute of Transport
<b>CITE</b>	conformity & interoperability test & evaluation
<b>CIWG</b>	Communication Infrastructure Working Group (IATA)
<b>CL</b>	Civil-Long (proposed GPS L2 code carrying no data - alongside CM) correlation loss
<b>Class</b>	Category in classification register
<b>Class A or B</b>	Class of AIS installation (A for large ships, B for leisure craft)
<b>CLCS</b>	Commission on the Outer Limits of the Continental Shelf (UN)
<b>cld</b>	cloud
<b>CLGE</b>	Comité de liaison des géomètres Européens
<b>CLI</b>	caller line identification
<b>CM</b>	Civil-Moderate (proposed GPS L2 code carrying data - alongside CL)
<b>CMA</b>	Central Monitoring Agency (NATS)
<b>CMAG</b>	Civil and Military Air Group (RIN SIG)
<b>CMATZ</b>	combined military air traffic zone
<b>CMCU</b>	Clock Monitoring and Control Unit (Galileo)
<b>CME</b>	coronal mass ejection (from sun)
<b>CMG</b>	course made good (rhumb line direction between 2 fixes)
<b>CMIC</b>	Civil Military Interface Unit (EUROCONTROL)
<b>CMOS</b>	complementary metal oxide semiconductor
<b>CMR</b>	civil marine radar
<b>CMU</b>	communications management unit
<b>CMYK</b>	Cyan, Magenta, Yellow and black (colour system for printing)
<b>CN</b>	compass north <i>Northerly direction of the needle or zero-index of a magnetic compass.</i>
<b>CNAV</b>	Civil Navigation Message (on GPS second civil signal (L2C))
<b>CNC</b>	computer numerically controlled
<b>CNES</b>	Centre Nationale d'Etudes Spatiales (French National Space Agency)
<b>CNIG</b>	Centro Nacional de Informacao Geografica (Portugal)
<b>CNIS</b>	Channel Navigation Information Service (Dover)
<b>CNS</b>	central nervous system communications, navigation and surveillance
<b>COA</b>	course of advance (course to make good) <i>Direction from the (ship's) last fix to next estimated position, expressed in angular units from true north.</i>
<b>COBA</b>	cost-benefit analysis
<b>CoC</b>	Certificate of Competency
<b>CODA</b>	Central Office of Delay Analysis (EUROCONTROL)
<b>CODE</b>	Center for Orbit Determination in Europe (University of Bern)

<b>COG</b>	course over the ground <i>Direction of (the ship's) movement relative to the earth, measured on board (the ship).</i>
<b>COGO</b>	coordinate geometry (algorithms for surveying)
<b>COGR</b>	continuously operating GPS receiver
<b>COLREGs</b>	International Regs for Preventing Collisions at Sea (IRPCS) (IMO)
<b>CoM</b>	centre of mass
<b>Combi-Road</b>	<i>Segregated track for automatic transport control and delivery of container freight cargoes (Netherlands).</i>
<b>COMEDS</b>	CONUS Meteorological Distribution System
<b>COMESA</b>	Common Market for Eastern and Southern Africa <i>21 African states. Initiatives include adoption of an 'open skies' policy and a joint CNS/ATM system.</i>
<b>Compass</b>	Another name for the 'Beidou' Chinese satnav system
<b>Compatability</b>	no significant inter-system interference
<b>COMSAR</b>	Sub-Ctee on Radiocommunications and Search and Rescue (IMO)
<b>confidence interval</b>	<i>The numerical range within which an unknown is estimated to be with a given probability.</i>
<b>confidence level</b>	<i>The percentage of confidence that a given statement is correct or that a stated interval includes an unknown.</i>
<b>confidence limits</b>	<i>The extremes of confidence interval.</i>
<b>CONOPS</b>	Concept of Operations (US)
<b>continuity</b>	<i>The ability of a system to function within specified performance limits without interruption during a specified POP.</i>
<b>CONUS</b>	Continental/Contiguous/Conterminous (48) United States
<b>CONVERGE</b>	Completed (2000) EU project on deployment of ITS
<b>Conversion angle</b>	<i>Angular difference between rhumb line and great circle between two points.</i>
<b>COOPATS</b>	Cooperative ATS Concept (EUROCONTROL)
<b>CoP</b>	centre of phase Conformity of Production (assessment of client under VCA)
<b>COP</b>	common operating picture
<b>COPUOS</b>	Committee on the Peaceful Use of Outer Space (UN)
<b>correction</b>	<i>The best estimate that can be made of the difference between the true and the measured value of a parameter. The sign is such that a correction is to be added to an observed reading is taken as positive.</i>
<b>CORS</b>	continuously operating reference station (DGPS)
<b>COS</b>	continuity of service
<b>COSH</b>	Committee on Shipping Hydrography
<b>COSPAR</b>	Committee on Space Research (42 states + 12 scientific bodies 02)
<b>COSPAS-SARSAT</b>	Cosmicheskaya Sistyema Poiska Avarynich Sudov - SAR Sat-aided <i>Satellite-aided SAR system based on low altitude near polar orbit satellites designed to locate distress beacons on 121.5 and 406 MHz.</i>

<b>COSS</b>	Committee on Safe Seas (EU)
<b>COST</b>	COoperation in the field of Scientific & Technical research <i>Cooperation between 35 countries across Europe (2009).</i>
<b>CoSWP</b>	Code of Safe Working Practices for Merchant Seamen
<b>COTS</b>	commercial off-the-shelf (equipment)
<b>COU</b>	change-only update (eg of maps)
<b>coverage</b>	<i>The surface area or space volume in which signals are adequate to permit the user to determine position to a specified level of performance (after IMO).</i>
<b>COZDIS</b>	Coastal and Oceanic Zones Display and Information System
<b>CP</b>	charging point (for road user charging) cyclic prefix (to mitigate multipath)
<b>CPA</b>	closest point of approach
<b>CPD</b>	carrier phase difference (signal processing) collaborative product design
<b>CPDLC</b>	controller-pilot data link communications <i>CPDLC Build 1 is based on VDL Mode 2.</i>
<b>CPE</b>	customer premises equipment
<b>CPF</b>	carotenoid-porphyrin-fullerine Central Processing Facility (EGNOS, MSAS)
<b>CPFPS</b>	Central Processing Facility Processing Set (EGNOS)
<b>CPGS</b>	cassette preparation ground station (flight planning)
<b>CPL</b>	commercial pilot's licence current performance level
<b>CPLD</b>	complex programmable logic device
<b>CPM</b>	Conference Preparatory Meeting (ITU)
<b>CPRS</b>	confidential position reporting system
<b>CPS</b>	central processing station (GNSS)
<b>cps</b>	cycles per second (Hz)
<b>CPU</b>	central processing unit
<b>CRC</b>	cyclic redundancy code (check)
<b>CRCO</b>	Central Route Charges Office (EUROCONTROL) <i>Responsible for the collection of aviation navigation charges.</i>
<b>CRM</b>	cockpit (or crew) resource management collision risk model customer relationship management (comms)
<b>cross-track error</b>	<i>Position error perpendicular to the intended track.</i>
<b>CRP</b>	compulsory reporting point
<b>CRPA</b>	controlled radiation pattern antenna (eg to combat GPS jamming)
<b>CRS</b>	coast radio station

	course (heading) <i>Angle measured in horizontal plane from a reference direction, counted clockwise from 000° through 360°, written as a 3 digit number.</i>
<b>CRT</b>	cathode ray tube
<b>CRU</b>	carrier removal (signal processing)
<b>Cs</b>	cirrostratus cloud
<b>CS</b>	Commercial Service (Galileo) <i>Uses OS plus 2 additional frequencies for higher data rate and improved accuracy. Fee-paying with service guarantee.</i>
	control segment
<b>CSAC</b>	chip-scale atomic clock
<b>CSE</b>	course course selection error
<b>CSEL</b>	Combat Survivor Evader Locator (US)
<b>CSG</b>	Centre Spatial Guyanais (CNES/ESA launch area close to equator) <i>In French Guyana; ideal for launching geostationary satellites.</i>
	computer symbol generator
<b>CSMA</b>	carrier sense multiple access
<b>CSOC</b>	Consolidated Space Operations Centre
<b>CSR</b>	Cab Secure Radio (rail at UHF, but band to be shared from 2006) Common Structural Rules (for bulk carriers & tankers from Apr 06) CSR plc (formerly Cambridge Silicon Radio)
<b>CSS</b>	Code of Shipmanagement Standards customer service station (Galileo)
<b>CSV</b>	Comma Separated Values <i>Format for digital mapping - eg OS MasterMap Address Layer 2.</i>
<b>CT</b>	computerised tomography (to image ionosphere electron density)
<b>CTA</b>	control area (ATC)
<b>CTAF</b>	Common Traffic Advisory Frequency (used at small airfields in USA)
<b>CTAS</b>	Centre-TRACON Automation System (FAA) <i>ATC automation tools - TMA, FAST and DA.</i>
<b>CTK</b>	cargo tonne kilometres (a measure of civil air capacity)
<b>CTP</b>	Common Transport Policy (EU)
<b>CTR</b>	Chain Time Reference (LORAN-C) (CTZ) control zone (ATC)
<b>CTS</b>	course to steer (true course) <i>The intended direction of movement (of a ship), defined by the angle between the meridian through its position and the fore-and-aft line (of the ship), expressed in angular units from true north (000°).</i>
<b>CTSC</b>	Converging Technology and Services Committee (FEI)
<b>CTTL</b>	China Telecommunications Technology Labs (Beijing)
<b>CTU</b>	cargo transport unit

<b>CTU</b>	Czech Technical University
<b>CTW</b>	course through water <i>Direction of the ship's movement through the water, defined by the angle between the meridian through its position and the direction of the ship's movement through the water, expressed in angular units from true north (000°).</i>
<b>CTZ</b>	(CTR) control zone (ATC)
<b>Cu</b>	cumulus cloud
<b>CUAP</b>	Chart User's Advisory Panel (of HO)
<b>CUG</b>	closed user group
<b>CUPT</b>	coordinate update
<b>CURSOR</b>	proprietary positioning system using GSM phones
<b>CV</b>	common view (mode of operating GPS or LORAN for time transfer)
<b>CVHS</b>	Co-operative Vehicle Highways System ('platooning' of vehicles)
<b>CVN</b>	continuous visual navigation
<b>CVO</b>	commercial vehicle operat/or/ion
<b>CVR</b>	cockpit voice recorder
<b>CVRS</b>	computerised vehicle routing and scheduling
<b>CW</b>	clockwise continuous-wave
<b>CWAAS</b>	Canadian WAAS
<b>CWI</b>	continuous-wave interference
<b>CWP</b>	controller working position (ATC)
<b>CWS</b>	collision warning system
<b>cyber-car</b>	remote controlled or self-driving robot vehicle - a form of PRT
<b>CYCC</b>	Conference of Yacht Cruising Clubs (main UK clubs)
<b>CZIN</b>	Czech Republic Institute of Navigation
<b>d</b>	deci (SI unit multiplier of $10^{-1}$ )
<b>D Region</b>	Lowest part of ionosphere where most HF absorption occurs by day
<b>D-AMPS</b>	A type of DTMA used by some 2G mobile phone systems
<b>D-ATIS</b>	Digital Automatic Terminal Information Service (air)
<b>D-band</b>	NATO radar band 1-2 GHz = 30-15 cm
<b>D-OTIS</b>	(DOTIS) Digital Operational Terminal Information Service (air)
<b>d.lat</b>	difference of latitude <i>Shorter arc of any meridian between the parallels of 2 places.</i>
<b>d.lon</b>	difference of longitude <i>The shorter arc of a parallel between the meridians of 2 places.</i>
<b>D&amp;D</b>	Distress and Diversion (UK ATC facility)
<b>D2B</b>	International multimedia networking protocol for use within vehicles
<b>da</b>	deca (SI unit multiplier of $10^1$ )
<b>DA</b>	decision altitude (referenced to sea level) Descent Advisor (ATC management tool)(US)

<b>DAB</b>	digital audio broadcast(ing)
<b>DAC</b>	digital-to-analogue converter
<b>DADI</b>	datalinking of aircraft-derived information
<b>DAGR</b>	Defense Advanced GPS Receiver (US)
<b>DAISY</b>	Digital Automatic Identification System
<b>DAP</b>	database assisted positioning Directorate of Airspace Policy (CAA) downlink aircraft parameter (SSR Mode S)
<b>DAPS</b>	data access protocol system (ATC Mode S)
<b>DARC</b>	data radio channel
<b>DARPA</b>	Defense Advanced Research Projects Agency (US)
<b>DARS</b>	Digital Audio Radio Service (satellite broadcast)
<b>DASB</b>	Defence Aviation Safety Board (UK)
<b>DASC</b>	Defence Aviation Safety Centre (UK - Bentley Priory) <i>UK tri-Service formed in 2002 to develop, regulate and audit policy.</i>
<b>DAT</b>	digital audio tape (holds 700 MB to 2.3 GB of data)
<b>Datatrak</b>	proprietary navigation system (Siemens UK) <i>Coherent LF DTMA navigation system giving an accuracy &lt;50 m. Transmitters about 120 km apart.</i>
<b>dB</b>	decibel <i>Power ratio in dB = 10log(power ratio). Voltage or current ratio in dB = 20log(voltage or current ratio).</i>
<b>DBF</b>	digital beam-forming (antenna)
<b>dB<sub>i</sub></b>	decibels, isotropic
<b>DBTF</b>	database terrain following
<b>dBW</b>	decibel watts (power level relative to 1 watt)
<b>DCB</b>	differential code bias (eg of a GPS satellite)
<b>DCDB</b>	Data Centre on Digital Bathymetry
<b>DCE</b>	data circuit-terminating equipment
<b>DCPC</b>	direct controller/pilot communications
<b>DCPS</b>	differentially corrected positioning service
<b>DCT</b>	direct
<b>DCW</b>	Digital Chart of the World (1:1M air nav chart from US DMA)
<b>DD</b>	double-differencing (GNSS relative positioning)
<b>DDC</b>	digital down-converter
<b>DDF</b>	divided difference filter
<b>DDG</b>	dispatch deviation guide (associated with MEL)
<b>DDGI</b>	German umbrella organisation for geoinformation
<b>DDM</b>	difference in depth of modulation
<b>DDRC</b>	Diving Diseases Recompression Chamber (Poole, UK)
<b>DDV</b>	Design, Development and In-Orbit Validation (phase of Galileo) <i>~ 2001-2005.</i>

<b>dead ahead</b>	direction ahead of a (ship's) fore-and-aft line
<b>Dec</b>	declination
<b>Decca</b>	hyperbolic LF navigation system <i>In UK funded by THLS until 31 Mar 00.</i>
<b>DECT</b>	Digital European Cordless Telecommunications <i>Short range speech or data system. TDMA on 1.88-1.90 GHz.</i>
<b>DEFRA</b>	Department for the Environment, Food and Rural Affairs (UK)
<b>deg</b>	degrees
<b>DELTA</b>	Specification for vehicle DSRC modules and OBTs (EC)
<b>DEM</b>	digital elevation model/map (for charting etc)
<b>Demeter</b>	Digital Electronic Mapping of European Territory <i>Covers data standards for road networks for nav systems.</i>
<b>Dep</b>	departure <i>Distance between 2 meridians at any given parallel of latitude, expressed in nautical miles.</i>
<b>DERA</b>	Defence Evaluation and Research Agency (UK) <i>On 1 Apr 01 split into New DERA and the Defence Science and Technology (DST) Lab. New DERA becomes 'QinetiQ' on 2 Jul 01.</i>
<b>DES</b>	Data Encryption Standard
<b>Dest</b>	destination
<b>DETR</b>	Department of the Environment, Transport and the Regions (UK) <i>Ceased in Jun 01 - most became DTLR.</i>
<b>Dev</b>	deviation <i>Angle between MN and CN, from MN eastwards named E (+), westwards named W (-).</i>
<b>DF</b>	direct to a fix
<b>DFDAU</b>	digital flight data acquisition unit
<b>DFDR</b>	digital flight data recorder
<b>DFDRS</b>	digital flight data recording system
<b>DFGC</b>	digital flight guidance computer
<b>DFGS</b>	digital flight guidance system
<b>DFHRS</b>	Digital Finite Element Height Reference Surface (German HRS)
<b>DFIS</b>	Digital Flight Information Services
<b>DFS</b>	Deutsche Flugsicherung GmbH (German ATSP)
<b>DfT</b>	Department for Transport (UK)
<b>DFTI</b>	distance from touchdown indicator
<b>DG</b>	degaussing directional gyro Director-General
<b>D<sub>g</sub></b>	distance between 2 points on a great circle (orthodromic distance)
<b>DG MARE</b>	Directorate-General for Maritime Affairs and Fisheries (EU)
<b>DG Range</b>	degaussing range

<b>DG TREN</b>	Director General TRansport and ENergy (EC - was DG VII)
<b>DGAC</b>	Direction Général a l'Aviation Civile (French CAA)
<b>DGLONASS</b>	Differential GLONASS
<b>DGNSS</b>	Differential GNSS
<b>DGON</b>	Deutsche Gesellschaft für Ortung und Navigation e.V. <i>German Institute of Navigation.</i>
<b>DGPS</b>	(or D-GPS) Differential GPS
<b>DGS</b>	data gathering station
<b>DGT</b>	digital GPS translator (of TGRS)
<b>DH</b>	decision height (of landing aircraft referenced to terrain) <i>Height above runway at which pilot must have runway approach lights in sight or initiate the missed-approach procedure.</i>
<b>DHS</b>	Department of Homeland Security (US)
<b>DI</b>	direction indicator
<b>DIA</b>	detection, identification and adaptation
<b>differential system</b>	<i>An augmentation system whereby radionavigation signals are monitored at a known position and the corrections so determined are transmitted to users in the coverage area.</i>
<b>DIN</b>	Deutsches Institut für Normung e.V. (German standards body)
<b>DIP</b>	dual in-line package (chip)
<b>DIRECTS</b>	Demo of Interoperable R'd user End-to-end Charging & Telematics
<b>DIS</b>	Draft International Standard (ISO) Driver Information System
<b>dist</b>	distance
<b>diurnal</b>	Every 24 hours
<b>DIUS</b>	Department for Innovation, Universities and Skills (UK)
<b>DIW</b>	dead in water
<b>DL</b>	datalink
<b>D<sub>L</sub></b>	distance between 2 points on a rhumb line (loxodromic distance)
<b>DLat</b>	difference in latitude
<b>DLL</b>	delay lock loop
<b>DLong</b>	difference in longitude
<b>DLORAN</b>	Differential LORAN
<b>DLR</b>	Deutsches Zentrum für Luft-und Raum-Fahrt <i>German National Space Agency.</i>
<b>DLT</b>	digital linear tape
<b>DMA</b>	Defense Mapping Agency (US)(now NIMA)
<b>DMC</b>	digital magnetic compass digital management computer
<b>DME</b>	distance measuring equipment
<b>DMEAN</b>	Best-practice in current ATM (precursor to SESAR)
<b>DMP</b>	difference of meridional parts



<b>DMS</b>	dimethyl sulphide <i>Produced by phytoplankton in response to zooplankton grazing - its odour attracts some birds, enabling them to navigate to food-rich sources.</i>
<b>DNA</b>	Direction de la Navigation Aérienne (French ATSP)
<b>DNC</b>	digital nautical chart
<b>DNF</b>	Digital National Framework (OS)
<b>DNS</b>	Decca Navigator System (withdrawn in UK 31 March 2000) Domain Name System (converts TCP/IP to web address)
<b>DNV</b>	Det Norske Veritas (classification society)
<b>DOA</b>	direction of arrival (method of Cellphone positioning)
<b>DoD</b>	Department of Defense (US)
<b>Dolphin</b>	A UK TETRA system
<b>DOMNR</b>	Department of Marine and Natural Resources (Ireland)
<b>DOP</b>	dilution of precision <i>A dimensionless number that accounts for the contribution of relative satellite geometry to errors in position determination.</i>
<b>DORIS</b>	Doppler Orbitography and Radiopositioning by Satellite
<b>DOT</b>	Department of Transportation (US)
<b>DOTIS</b>	(D-OTIS) Digital Operational Terminal Information Service (air)
<b>DP</b>	dew-point dynamic positioning
<b>DPDR</b>	delta preliminary design review (Galileo)
<b>DPS</b>	dynamic positioning system
<b>DQI</b>	Digital Quartz Inertial Measurement Unit (Boeing, US)
<b>DQM</b>	data quality monitoring
<b>DR</b>	dead (deduced) reckoning drifting (met)
<b>DRA</b>	digital radio-altimeter
<b>DR<sub>cor</sub></b>	corrected DR position <i>Estimated position obtained by adding to the last fix course (track) and speed.</i>
<b>DRG</b>	digital route guidance
<b>DRI</b>	driver restriction information (eg info on blocked roads)
<b>Drift angle</b>	<i>Angular difference between: (Sea) course of advance and course through water; (Air) heading and track.</i>
<b>DRISL</b>	Data Relay Inter-Satellite Links (part of WSN)
<b>DRIVE</b>	Dedicated Road Infrastructure for Vehicle Safety in Europe (EU)
<b>DRL</b>	data relay link (eg between satellite and ground) daytime running light (vehicle)
<b>DRM</b>	data resource management (comms) digital road map

<b>dRMS</b>	distance root-mean-square <i>The root-mean-square of the radial distances from the true position to the observed positions obtained from a number of trials.</i>
<b>DRN</b>	data radio network
<b>DRS</b>	dead reckoning system differential reference station
<b>DRT</b>	demand responsive transport (small buses etc)
<b>DS</b>	duststorm (met)
<b>DS-CDMA</b>	direct-sequence code-division multiple access
<b>DS-UWB</b>	direct-sequence UWB
<b>DSB</b>	Defense Science Board (US) double sideband
<b>DSC</b>	Dangerous Goods, Solid Cargoes and Containers (IMO) digital selective calling (GMDSS) dynamically supported craft
<b>DSI</b>	detailed spectrum investigation
<b>DSM</b>	digital surface model (for charting)
<b>DSN</b>	Deep Space Network
<b>DSNA-DTI</b>	Direction de la Technique et de l'Innovation <i>. . des Services de la Navigation Aérienne.</i>
<b>DSP</b>	digital signal process(ing)(or)
<b>DSRC</b>	dedicated short-range communication (system)
<b>DSS</b>	decision support system
<b>DSSR</b>	Digital Short-Range Radio <i>Direct connection between hand-portables over short distances. Typically use 880-890 and 933-935 MHz.</i>
<b>DST</b>	data storage tag (used to record eg depth profiles of tagged fish) daylight saving time
<b>Dstl</b>	Defence Science and Technology Laboratory (UK - ex-DERA) <i>Formed on 1 Apr 01 as the defence arm of what was DERA.</i>
<b>DSTO</b>	Defence Science and Technology Organisation (Australia)
<b>DSV</b>	diving support vessel
<b>DT&amp;E</b>	Development Test and Evaluation (comes before OT&E)
<b>DTE</b>	data terminal equipment
<b>DTED</b>	digital terrain elevation data(base)
<b>DTEO</b>	Defence Test and Evaluation Organisation (Division of DERA)
<b>DTG</b>	distance to go dynamically tuned gyro
<b>DTI</b>	Department of Trade and Industry (UK)
<b>DTLR</b>	Department for Transport, Local Government & the Regions (UK) <i>Formed from DETR in Jun 01.</i>

DTM	digital terrain model/map
DTOA	difference in time of arrival (of events in 2 signals)
DTS	Digital Terrain System <i>Predictive GPWS for military ac.</i>
DTT	digital terrestrial television
DU	display unit dust (met)
DUA	dedicated user area (ATC)
duplex	use of separate radio channels for transmission and reception
DUT1	value of predicted difference between UTC and UT1
DVB	digital video broadcast(ing)
DVB-H	digital video broadcasting for handhelds (standard for mobiles)
DVD	digital versatile disc <i>Initially stood for 'digital video disc'. Holds up to 17 Gigabytes.</i>
DVI	direct voice input (eg cockpit)
DVOR	doppler VOR
DVP	Development Verification Platform (EGNOS)
DWT	(Dwt) deadweight tonnage
DX.90	Format for digital cartographic data
DZ	drizzle (met) dropping zone (parachutes)
E-112	Enhanced 112 (inc automatic location of European mobile phones)
E-119	Enhanced 119 (Japanese emergency no (= E112 or E-911)
E-911	Enhanced 911 (inc automatic location of US mobile phones) <i>Requires handset location to 150m (95%).</i>
E-band	NATO radar band 2-3 GHz = 15-10 cm
E-Call	emergency call (GTP)
E-CID	Enhanced Cell ID (mobile phones)
E-field	electric-field (eg of aerial)
E-LORAN	Enhanced LORAN <i>Modern transmitters &amp; receivers giving all-in-view operation and carrying GNSS overlay data. Better than 20 m and 40 ns.</i>
E-MERGE	ERTICO project for pan-European vehicle emergency call services <i>Project completion March 2004.</i>
e-Navigation	<i>The harmonised creation, collection, integration, exchange and presentation of maritime information onboard and ashore by electronic means to enhance berth-to-berth navigation and related services, for safety and security at sea and protection of the marine environment (IMO).</i>
E-OTD	enhanced observed time difference (100m accuracy from cellph'n)
E1, E2 etc	Galileo carrier frequencies <i>Frequencies (MHz) are 1,590 (E1), 1,563 (E2), 1,216 (E3), 1,260 (E4), 1,176 (E5A = GPS L5), 1,201 (E5B) and 1,280 (E6).</i>

<b>E112</b>	European requirement to provide location of emerg calls fm mobiles
<b>E2PROM</b>	electrically erasable programmable read-only memory
<b>E911</b>	US requirement to provide location of emerg calls from mobiles
<b>EA</b>	(EA13) Euro Area (Jan 07) <i>Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Slovenia, Spain.</i>
<b>EACOS</b>	Effects of the Upper Atmosphere on Terrest'l & Earth-Space Comms <i>A COST project.</i>
<b>EAD</b>	European Aeronautical Information Services Database <i>Operational since Jun 03, provides a complete and up-to-date worldwide reference of quality-assured aeronautical information.</i>
<b>EADI</b>	electronic attitude director indicator
<b>EADS</b>	European Aeronautic, Defence & Space Co
<b>EAG</b>	European ATFM Group (EUROCONTROL)
<b>EAL</b>	Echelle Atomique Libre (Free Atomic Time) <i>The weighted mean of &gt;260 international atomic clocks.</i>
<b>EANPG</b>	European Air Navigation Planning Group (ICAO)
<b>EAS</b>	equivalent airspeed
<b>EASA</b>	European Aviation Safety Authority (EU - operational on 28 Sep 03)
<b>EAT</b>	estimated (or expected) approach time
<b>EATCHIP</b>	European ATC Harmonisation and Integration Prog (EUROCONTROL)
<b>EATMP</b>	European Air Traffic Management Programme (EUROCONTROL)
<b>EATMS</b>	European Air Traffic Management System <i>Under EUROCONTROL 's ATM2000 initiative.</i>
<b>EBCDIC</b>	extended binary-coded decimal interchange code (8-bit)
<b>EBL</b>	electronic bearing line (radar)
<b>EBM</b>	electronic bearing marker
<b>EBOM</b>	(E-BOM) electronic bill of material
<b>EBU</b>	European Broadcasting Union <i>66 member states in Europe and Mediterranean area plus 51 associate member states.</i>
<b>EC</b>	European Commission
<b>ECA</b>	European Cockpit Association
	European Common Frequency Allocation Table
<b>ECAC</b>	European Civil Aviation Conference (42 European states in 2006)
<b>eCall</b>	Pan-European in-vehicle emergency call system (mandatory by 2009)
<b>ECAM</b>	electronic centralised aircraft monitor
<b>ECASBA</b>	EU Association of Shipbrokers and Agents
<b>ECC</b>	electronic chart centre
<b>ECCG</b>	Experimental Centre Consultation Group (EUROCONTROL)

<b>ECD</b>	envelope-to-cycle delay (eg LORAN)
<b>ECDIS</b>	electronic chart display and information system <i>Hardware and software that can display ENC data.</i>
<b>ECEF</b>	earth-centred earth-fixed (coordinate frame)
<b>ECI</b>	earth-centred inertial (reference frame)
<b>ECINS</b>	electronic charting and integrated navigation system
<b>ECIP</b>	European Convergence and Implementation Plan (air)
<b>ECLAYR</b>	EGNOS Continuous Logging AnalyseR
<b>ECOMM</b>	European Conference on Mobility Management (EU) (eg ECOMM '97)
<b>eConvoy</b>	Automatic close separation between cars (to increase road occupancy) <i>= Platooning or eTow-bar.</i>
<b>ECOTTRIS</b>	European Collaboration on Transition Training for Improved Safety <i>EC air transport (ATM) safety project to ensure that the human element is adequately trained for technical innovations, especially the 'glass cockpit'.</i>
<b>ECP</b>	Engineering Change Proposal European Common Proposal (for WRC)
<b>ECPINS</b>	Electronic Chart Precise Integrated Navigation System (US)
<b>ECS</b>	electronic chart system
<b>ECSA</b>	European Community Shipowners' Association
<b>ECU</b>	electronic control unit (in vehicle)
<b>ED</b>	emission delay (of LORAN slave station = coding delay + transit time) European Datum <i>Most commonly used is ED-50 (of 1950). This uses a non-geocentric geoid to express latitude &amp; longitude within Europe.</i>
<b>EDAS</b>	EGNOS Data Access System
<b>EDC</b>	early display configuration
<b>EDGE</b>	Enhanced Data-rate for GSM Evolution (mobile phones)
<b>EDI</b>	electronic data interchange
<b>EDM</b>	electronic distance measurement
<b>EDPG</b>	European Data Producers' Group
<b>EDR</b>	excessive descent rate (TAWS alert)
<b>EDRM</b>	European digital road map
<b>EDU</b>	electronic display unit
<b>EEA</b>	European Environment Agency
<b>EEIG</b>	European Economic Interest Group (for ERTMS)
<b>EELV</b>	Evolved Expandable Launch Vehicle (USAF - covers GPS launches)
<b>EET</b>	estimated elapsed time
<b>EETES</b>	EGNOS End-to-End Simulator
<b>EETS</b>	European Electronic Toll Service
<b>EEZ</b>	exclusive economic zone
<b>EFB</b>	electronic flight bag (replaces paper charts & documentation)

<b>EFC</b>	electronic fee collection (includes ERP, ETC, RUC etc)
<b>EFCS</b>	electronic flight control system
<b>EFDR</b>	electronic flight data recorder
<b>EFI</b>	external functionality interface (Telematics Forum WAP interface)
<b>EFIS</b>	electronic flight instrument system
<b>EFT</b>	European Transport Workers' Federation
<b>EFTF</b>	European Frequency and Time Forum
<b>EGAS</b>	European Guaranteed Access to Space (ESA programme) <i>Support for European launch service (2005-09).</i>
<b>EGATS</b>	European Guild of Air Traffic Services
<b>EGC</b>	enhanced group calling
<b>EGDOP</b>	extended geometric dilution of precision
<b>EGI</b>	embedded GPS inertial (eg US GPS JPO programme)
<b>EGII</b>	European Geographic Information Infrastructure
<b>EGIS</b>	European Conference on GIS
<b>EGNOS</b>	European Geostationary Navigation Overlay Service <i>Space-based augmentation system to provide augmentation to GPS and GLONASS. ESTB running from 2001; Integration Test SIS Apr 03; Op Eval Phase from 2004; Open Service by early 2007.</i>
<b>EGPS</b>	Enhanced GPS
<b>EGPWS</b>	Enhanced Ground Proximity Warning System
<b>EGR</b>	embedded GPS receiver
<b>EGS</b>	European Geophysical Society (Katlenberg-Lindau, Germany) European GNSS Secretariat (to the ETG)
<b>EHF</b>	extremely high frequency (30-300 GHz)
<b>EHMA</b>	European Harbour Masters' Association
<b>EHS</b>	enhanced surveillance mode SSR (Enhanced Mode S) <i>Aircraft identification, airspeed, altitude, vertical velocity + other info via SSR Mode S.</i>
<b>EHSI</b>	electronic horizontal situation indicator
<b>EIDS</b>	European Integrity Determination System
<b>EIFS</b>	Advanced Integrated Fare System (Motorola smart card system)
<b>EIRP</b>	(eirp) equivalent isotropically radiated power <i>Theoretical measure of power of a transmitter that radiates equally in all directions. Usually in dBW.</i>
<b>EIV</b>	errors in variables
<b>EJN</b>	European Journal of Navigation (DGON, NIN & NNF)
<b>EKF</b>	extended/enhanced Kalman filter
<b>ELBA</b>	Emergency Location Beacon, Aircraft (ELT)
<b>ELFAA</b>	European Low Fares Airline Association
<b>ELL</b>	electrosensory lateral line lobe (of fish brains)

<b>ellipsoid</b>	<i>A solid of which all plane sections through one axis are ellipses and all other plane sections are ellipses or circles.</i>
<b>ELM</b>	extended length message (ATC Mode S)
<b>eLORAN</b>	(eLoran) Enhanced LORAN
<b>ELOS</b>	extended line-of-sight
<b>ELRM</b>	Enhanced LBS Reference Model
<b>ELRR</b>	Enhanced Loran Reference Receiver (Symmetricom)
<b>ELS</b>	elementary surveillance (aircraft identification via SSR Mode S)
<b>ELT</b>	emergency location terminal emergency location transmitter <i>Transmitter fixed to aircraft which transmits on emergency frequencies on impact or immersion.</i>
<b>ELTIS</b>	European Local Transport Information Service (EU) <i>Can be found at <a href="http://www.eltis.org">www.eltis.org</a>.</i>
<b>EM</b>	electromagnetic engineering model
<b>EMC</b>	electromagnetic compatibility <i>Ability of equipment or systems to be used within designated environments without causing or receiving electromagnetic interference.</i>
<b>EMCA</b>	European Maritime Core Area
<b>EMCON</b>	emission control
<b>EMD</b>	empirical mode decomposition
<b>EMDA</b>	East Midlands Development Authority
<b>EMEA</b>	Europe, Middle East and Africa (ICAO area)
<b>EMEC</b>	European Maritime Equipment Council
<b>emf</b>	electromotive force
<b>EMI</b>	electromagnetic interference
<b>EMILY</b>	Project for the hybridisation of satellite and cellular positioning (EC) <i>Completion Dec 04.</i>
<b>EMP</b>	electromagnetic pulse
<b>EMPA</b>	European Maritime Pilots' Association
<b>EMRF</b>	European Maritime Radionavigation Forum <i>Independent body formed December 1999 from the European GNSS Maritime Advisory Forum.</i>
<b>EMRP</b>	equivalent monopole radiated power
<b>EMS</b>	EGNOS Message Server (archive of EGNOS broadcasted messages)
<b>EMSA</b>	European Maritime Safety Agency (EC - formed in 2002 post-'Erika')
<b>EN</b>	Européen Normalisation (European Standard)
<b>ENAC</b>	Italian CAA
<b>ENAV</b>	Ente Nazionale di Assistenza al Volo (Italian ATSP)

ENC	electronic navigational chart <i>Data is held as vectors and can be selectively displayed. When produced to IHO/IMO standard S57 Ed 3 the data is legally equivalent to a paper chart for vessels subject to SOLAS regulations.</i>
ENS	electronic navigation system
ENT	EGNOS Network Time
ENU	East-North-Up (system of defining coordinates)
ENVISAT	Environmental Satellite (ERS follow-on)
EO	earth observation (from space) electro-optics
EOD	electric organ discharge (typically of fish)
EOG	EGNOS Operators' Group <i>Alliance between ATS providers of France, Germany, Italy, Spain and UK which are contributing to the EGNOS project.</i>
EOIG	EGNOS Operations and Infrastructure Group <i>Consortium of EU aviation administrations.</i>
EOR	end-of-record (often 9999) Extent of the Realm (for UK, the land within limit of mean low water)
EOSI	Earth Observation Science Initiative (NERC)
EOTD	enhanced observed time difference (cellphone location technique) <i>Could give accuracy of &lt;100 m.</i>
EOW	end-of-week <i>In GPS occurs approx midnight each Sat/Sun. Week no. defined by 10-bit word and hence rolls-over to zero after each 1,024 weeks from 6 Jan 80. First roll-over was 22 Aug 99.</i>
EP	electronic protection (EW to ensure friendly use of spectrum) <i>In GPS to ensure use in higher J/S ratios and intermittent access.</i> estimated position (most probable position) <i>Most probable position obtained by adding to the last fix course (track) and speed, considering all estimated influence. (After ISO)</i> European Parliament
EPA	electronic plotting aid
EPF	energy-per-fix (eg in a GPS receiver)
EPFD	equivalent power flux density
EPFS	electronic position-fixing system
EPGS	electrical power generation system (aircraft)
EPIRB	Emergency Position-Indicating Radio Beacon
EPN	EUREF Permanent Network <i>Selection of European permanent GPS tracking stations. Central Bureau in Brussels.</i>
EPNdB	effective perceived noise decibel
EPO	EGNOS Project Office
EPOMM	European Platform on Mobility Management (EU)



<b>EPR</b>	electron paramagnetic resonance
<b>EPROM</b>	erasable programmable read-only memory
<b>EPS</b>	ECDIS Performance Standard (IMO) Encapsulated Postscript (graphic file format) EUMETSAT Polar System (operational met & climate monitoring) <i>Comprises 3 Metop satellites.</i>
<b>EPSRC</b>	Engineering and Physical Sciences Research Council (UK)
<b>EPVS</b>	electronic plotting video symbols (maritime)
<b>EQM</b>	electrical qualification model
<b>Equator</b>	primary great circle of the earth
<b>equatorial angle</b>	angle along the equator in the direction of earth rotation
<b>ER</b>	extended range
<b>ERA</b>	European Regional Airlines Association European Research Area
<b>ERAM</b>	En Route Automation Modernisation (US FAA)
<b>ERASMUS</b>	<i>A EC exchange programme for students in 31 European countries to study for part of their degree in another country.</i>
<b>ERBL</b>	electronic range and bearing line (radar)
<b>ERC</b>	en-route chart European Radiocommunications Committee
<b>ERD</b>	estimated range deviation
<b>ERDM</b>	equation restore difference method (eg for DGPS)
<b>ERF</b>	European Union Road Federation (part of IRF)
<b>ERGS</b>	electronic route guidance system
<b>ERIC</b>	European Road Information Centre <i>ERIC3000 is system for cross-border sharing of dynamic and semi-static road info. 21 nations and 100,000 km of European roads.</i>
<b>ERNP</b>	European Radionavigation Plan
<b>ERO</b>	European Radiocommunications Office (of the ERC) <i>Based in Copenhagen. <a href="http://www.ero.dk">www.ero.dk</a>.</i>
<b>EROPS</b>	extended range operations (aircraft)
<b>ERP</b>	effective radiated power <i>The product of power and gain of a transmitting aerial in a particular direction.</i>
	electronic road pricing (a form of EFC)
<b>ERRI</b>	European Rail Research Institute (based in Utrecht, NL)
<b>ERRV</b>	Emergency Response and Rescue Vessel
<b>ERRVA</b>	Emergency Response and Rescue Vessel Association <i>Was the SSOA until May 2000.</i>
<b>ERS</b>	En Route Supplement (for aircrew) European Remote Sensing satellite

<b>ERTICO</b>	Euro Road Transport Telematics Implementation Coord Organisation <i>Not-for-profit coordinating body based in Brussels. Custodian of the GATS Forum. www.ertico.com</i>
<b>ERTMS</b>	European Rail Traffic Management System (EU) <i>ETCS + GSM-R + ETML + HEROE.</i>
<b>ES</b>	electronic support (form of EW) environmental surveillance Extended Squitter (Mode S 1,090 MHz)
<b>ESA</b>	electronic sub-assembly European Space Agency <i>Inter-government body promoting European space technology for peaceful applications. Formed 1974. Comprises (08) Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland &amp; UK.</i>
<b>ESAF</b>	Eastern and Southern African Office (ICAO)
<b>eSafety</b>	EU initiative for in-vehicle systems (established 2001)
<b>ESARR</b>	EUROCONTROL Safety Regulatory Requirements
<b>ESD</b>	electro-static discharge
<b>ESDI</b>	European Spatial Data Infrastructure
<b>ESGN</b>	electrically-suspended gyro navigator
<b>ESNIS</b>	European Satellite Navigation Industries (was Galileo Industries) <i>Owned by Alcatel Alenia Space SAS (FR), Finmeccanica SpA (IT), EADS Astrium GmbH (GE), EADS Astrium Ltd (UK), Galileo Sistemas y Servicios (7 companies fm SP) &amp; 3 Thales subsidiaries.</i>
<b>ESNP</b>	European Satellite Navigation Programme (ETG)
<b>ESOC</b>	European Space Operations Centre
<b>ESoP</b>	European Statement of Principles
<b>ESP</b>	European Space Policy
<b>ESPO</b>	European Sea Ports Organisation
<b>ESRG</b>	Electronic Systems Research Group (Brunel University)
<b>ESRO</b>	European Space Research Organisation
<b>ESSP</b>	European Satellite Service Provider <i>Created in April 2001 to operate EGNOS. Shareholders are NATS (UK), DGAC/DSNA (F), AENA (E), ENAV (I), DFS (D), NAV-PT (P) and Skyguide (CH).</i>
<b>ESTB</b>	EGNOS System Test Bed
<b>ESTEC</b>	ESA Technical Centre (Navigation Lab at Noordwijk, Netherlands)
<b>ESTMP</b>	European Space Technology Master Plan
<b>ESV</b>	earth station (located on a vessel (for maritime comms) EGNOS signal-in-space validation

<b>ESVS</b>	EGNOS Service Volume Simulator
<b>ETA</b>	estimated time of arrival
<b>ETACS</b>	Extended Total Access Communication System (cellphone standard)
<b>ETC</b>	electronic toll collection (a form of EFC)
<b>ETCS</b>	European Train Control System (part of ERTMS) <i>Internationally Interoperable signalling and safety system. 3 functional levels.</i>
<b>ETD</b>	estimated time of departure
<b>ETE</b>	estimated time en route
<b>eTEN</b>	Electronic Trans-European (Transport) Networks (EU programme)
<b>ETF</b>	European Transport Workers' Federation
<b>ETG</b>	European Tripartite Group <i>Was a cooperation between EC, ESA and EUROCONTROL to develop EGNOS and perform preliminary work on GNSS-2.</i>
<b>ETML</b>	European Traffic Management Layer (part of ERTMS)
<b>ETOPS</b>	extended-range twin-engine operations
<b>eTow-bar</b>	Automatic close separation between cars (to increase road occupancy) <i>= Platooning or eConvoy.</i>
<b>ETRF</b>	European Terrestrial Reference Frame <i>Almost identical to WGS-84, but accommodates European continental drift.</i>
<b>ETRO</b>	estimated time to return of operations (eg of GPS satellite)
<b>ETRS89</b>	European Terrestrial Reference System 1989
<b>ETS</b>	European Telecommunications Standard
<b>ETSI</b>	European Telecommunications Standards Institute
<b>ETSO</b>	European Technical Standard Order (air)
<b>ETV</b>	emergency towing vessel
<b>EU</b>	(EU27) European Union (27 states) <i>Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Irish Republic, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden &amp; UK.</i>
<b>EU ETS</b>	European Union Emissions Trading Scheme
<b>EUFRANET</b>	European Freight Railway Network (EU)
<b>EUGIN</b>	European Group of Institutes of Navigation <i>Institutes (2004): Austria, France, Germany, Italy, Netherlands, Nordic, Poland, Portugal, Spain, Sweden, Switzerland, UK.</i>
<b>Eumetsat</b>	European Organisation for the Exploitation of Met Satellites <i>17 European member states, formed in 1986 to run op met satellites.</i>
<b>EUPOS</b>	European Position Determination System
<b>EUR</b>	European Region (of ICAO)
<b>EURAN</b>	European Radionavigation Systems and Services (DGON conf series)
<b>EUREF</b>	Reference Frame Sub-Commission for Europe (IAG - created ED-50)

<b>EUREKA</b>	Coordinated EU R&D programme for collaboration between industries
<b>Eureka 147</b>	A standard for digital audio broadcasting
<b>Eurely</b>	Consortium bidding for Galileo concession <i>Alcatel, Finmeccanica &amp; Vinci Concessions &amp; Capgemini.</i>
<b>EUROBALISE</b>	<i>Use of magnetic transponders (balises) for comms between track and train. Part of ETCS.</i>
<b>EUROCAE</b>	European Organisation for Civil Aviation Electronics
<b>EUROCONTROL</b>	European Organisation for the Safety of Air Navigation (38 States) <i>Albania Armenia Austria Belgium Bosnia Bulgaria Croatia Cyprus Czech Denmark Finland France Germany Greece Hungary Ireland Italy Lithuania Luxembourg Macedonia Malta Moldova Monaco Montenegro Netherlands Norway Poland Portugal Romania Serbia Slovakia Slovenia Spain Sweden Switzerland Turkey Ukraine UK.</i>
<b>Eurofix</b>	<i>Datalink system whereby GNSS differential and integrity data is transmitted by LORAN-C and Chayka. Transmitted by 4 NELS sites in 2004.</i>
<b>EuroGeographics</b>	<i>Represents 46 organisations from 41 countries of European National Mapping and Cadastral Agencies (NMCAs).</i>
<b>EUROGI</b>	European Umbrella Organisation for Geographic Information
<b>EUROLOOP</b>	semi-continuous transmission system for trains (part of ETCS)
<b>Europrice</b>	EC DG VII (TREN) project for deployment of road pricing in Europe <i>Linked to Intercept Project.</i>
<b>EURORADIO</b>	Based on GSM-R, will replace optical train signalling (part of ETCS)
<b>EUROSCOPE</b>	Efficient Urban Transport Ops Services Co-op of Port Cities in Eur <i>Development of ROMANSE and SCOPE.</i>
<b>EUSC</b>	European Union Satellite Centre (Torrejón de Ardoz, Spain)
<b>EUT</b>	equipment under test
<b>EUTELSAT</b>	European Telecommunications Satellite Organisation
<b>EUTELTRACS</b>	European Telecommunication and Tracking System
<b>EUTM</b>	Emergency Unusable Time (NELS Loran-C - see also UTM and AUTM) <i>Scheduled and authorised UTM but with less than 72 hrs of notice.</i>
<b>EUTP</b>	European Transfer Point (for intermodal transport)(EU)
<b>EV</b>	Eigenvalue
<b>EVA</b>	autonomous route guidance system from Robert Bosch
<b>EVI</b>	electronic vehicle identification (also EC DG TREN project)
<b>EVIS</b>	Electronic Vehicle Identification System (chip fitted to every car)
<b>EVS</b>	enhanced vision system
<b>EVSC</b>	External Vehicle Speed Control (MIRA project 1997-2001, now ISA)
<b>EW</b>	Electronic Warfare
<b>EWAAS</b>	End-State WAAS <i>Final stage of WAAS, capable of supporting navigation and CAT I precision approach.</i>
<b>EWAN</b>	EGNOS Wide Area Network

<b>EWG</b>	evil waveform generator
<b>EXM</b>	executive monitoring (GBAS processing)
<b>f</b>	Earth's flattening (typically 1/298) femto (SI unit multiplier of 10 <sup>-15</sup> ) frequency farad (capacitance)
<b>F-band</b>	NATO radar band 3-4 GHz = 10-7.5 cm
<b>F</b>	°Fahrenheit
<b>FA</b>	fix to an altitude
<b>FAA</b>	Federal Aviation Administration (US) Fleet Air Arm (RN)
<b>FAB</b>	fast adaptable bandwidth (of loop filter for tracking GPS signals)
<b>FADEC</b>	full-authority digital engine control
<b>FAF</b>	final approach fix
<b>FAI</b>	Fédération Aéronautique Internationale <i>Body for verification of aeronautical record attempts and sporting activities.</i>
<b>failure</b>	<i>The unintended termination of the ability of a system, or part of a system, to perform its required function.</i>
<b>failure rate</b>	<i>The average number of failures of a system, or part of a system, per unit time.</i>
<b>FANG</b>	Flight Management System Air Traffic Management Next Generation
<b>FANS</b>	Future Air Navigation System (ICAO) <i>FANS 1 is Boeing implementation. FANS A Airbus 330/340; FANS B Airbus 320.</i>
<b>FANS-1/A</b>	air-to-ground datalink (ICAO)
<b>FAR</b>	Federal Air Regulation (US)
<b>FASS</b>	FAst Ship Safety (EU Framework project)
<b>FAST</b>	Final Approach Sequencing Tool (for air traffic)(US)
<b>FASTEST</b>	<i>Facilitating Smart Card Technology for Electronic Ticketing &amp; Seamless Travel</i>
<b>FASTI</b>	First Air Traffic Control Support Tools Implementation <i>EUROCONTROL concept to provide additional ATC capacity.</i>
<b>FAT</b>	factory acceptance check final approach track
<b>FATDMA</b>	fixed allocation time division multiple access
<b>FAU</b>	fast acquisition unit (rx)
<b>FAWP</b>	final approach waypoint
<b>FBG</b>	fibre Bragg grating (type of accelerometer for solid-state IMU)
<b>FBW</b>	fly-by-wire
<b>FC</b>	funnel cloud (met)
<b>FCC</b>	Federal Communications Commission (US)

	flight control computer
	fully cellular containership
<b>FCD</b>	floating car data (from 'probe' vehicles that can create mapping data)
<b>FCL</b>	flight crew licensing
<b>FCO</b>	financed, constructed and operated
<b>FCS</b>	Federation of Communications Services (UK)
<b>Fcst</b>	forecast
<b>FCU</b>	flight control unit
<b>FD</b>	failure detection (algorithm) flight director
<b>FDA</b>	flight data analysis <i>Use of FDR data to monitor quality of operations.</i>
<b>FDAU</b>	flight data acquisition unit
<b>FDC</b>	France Developpement Conseil (involved with Galileo)
<b>FDDI</b>	fibre distributed data interface
<b>FDE</b>	fault (failure) detection and exclusion
<b>FDI</b>	fault/failure detection and isolation
<b>FDM</b>	flight data monitoring (FOQA in US) <i>The use of an electronic flight data recorder to routinely monitor crew performance (not jus when an incident occurs). Will be mandatory in Europe (&gt;27,000 kg) by end 2004; is voluntary in US.</i>
<b>FDMA</b>	frequency division multiple access
<b>FDP</b>	Flight Dynamics Facility (Galileo)
<b>FDP(S)</b>	flight data processing (system)
<b>FDPS</b>	flight data processing system
<b>FDR</b>	flight data recorder
<b>FEC</b>	forward error correction
<b>FEI</b>	Federation of Electronics Industries (UK) <i>Changed name to 'INTELLECT' in 2002.</i>
<b>FEM</b>	finite element mesh
<b>Fengyun</b>	(also FY) Chinese metsats (means 'wind and cloud')
<b>FERNS</b>	Far East RadioNavigation System <i>LORAN-C and Chayka system similar to NELLS.</i>
<b>FET</b>	field effect transistor
<b>FEW</b>	few clouds (1-2 oktas)
<b>FF</b>	fault free
<b>FFL</b>	fixed and flashing light
<b>FFM</b>	far field monitor
<b>FFSK</b>	fast frequency-shift keying
<b>FFT</b>	Fast Fourier Transform
<b>FG</b>	fog (met)
<b>FGDC</b>	Federal Geographic Data Committee (US)

<b>FGMU</b>	Frequency Generation and Modulation Unit (Galileo)
<b>FHA</b>	functional hazard assessment/analysis
<b>FHWA</b>	Federal Highway Administration (US)
<b>FIB</b>	flying infalatable boat (a RIB under a microlight wing)
<b>FIBE</b>	<b>Fully Internet Based ESTB</b>
<b>FIC</b>	Flight Information Centre
<b>FID</b>	Field Identifying Number (for farming, created in UK in 1995)
<b>FIG</b>	Fédération Internationale des Géomètres <i>International Federation of Surveyors.</i>
<b>FIR</b>	Flight Information Region
<b>Firewire</b>	Computer connection at up to 400 Mbps (IEEE-1394)
<b>FIS</b>	Field Identification System (of farming maps) Flight Information Service (ATC)
<b>FISG</b>	Fishing Industry Safety Group
<b>FISO</b>	Flight Information Service Officer
<b>fix</b>	<i>A position established by processing information from a number of navigation observations. Determined without reference to any other former position.</i>
<b>fix interval</b>	<i>Maximum time between fixes.</i>
<b>fix rate</b>	<i>The number of fixes per unit time.</i>
<b>FIX_8</b>	<i>Decimetre-level positioning project using a stand-alone GNSS rx using only free-to-air signals (GJU).</i>
<b>FKP</b>	Flächen Korrektur Parameter (in RTK to calculate area corrections)
<b>FL</b>	flight level <i>Altitude expressed in hundreds of ft, with ISA pressure setting of 1013.2mb set on altimeter.</i>
<b>FLARM</b>	Collision warning technology for gliders
<b>FLAS</b>	Flight Level Allocation Scheme
<b>FLIP</b>	Flight Information Publication
<b>FLIR</b>	forward-looking infrared
<b>FLL</b>	frequency-locked loop
<b>FLPFM</b>	foot-launched powered flying machine
<b>flt</b>	flight
<b>FLTA</b>	forward looking terrain avoidance (eg TAWS)
<b>FM</b>	faulty mode flight model frequency modulation from (met)
<b>FMC</b>	flight management computer
<b>FMCS</b>	flight management computer system
<b>FMEA</b>	failure modes and effects analysis
<b>FMECA</b>	failure mode, effects and criticality analysis

<b>FMES</b>	failure modes and effects summary
<b>FMG</b>	Frequency Management Group (ICAO)
<b>FMGS</b>	flight management and guidance system
<b>FMOD</b>	fuzzy model
<b>FMS</b>	fleet management system flight management system
<b>FMSP</b>	flight mode selector panel
<b>FNPT</b>	flight and navigation procedure trainer
<b>FO</b>	fibre optic fuel oil
<b>FOC</b>	Final Operating Capability (WAAS - by Dec 2007) flag of convenience Full Operational Capability <i>For GPS defined as 24 Block II/IIA satellites operating in assigned orbits, tested for military functionality and meeting military requirements (17 Jul 95). For Galileo will follow on from AOC.</i>
<b>FOD</b>	foreign object debris/damage
<b>FODCOMS</b>	Flight Operations Department Communications (CAA SRG)
<b>FOG</b>	fibre-optic gyro (introduced ~ 1985)
<b>FOM</b>	figure of merit flying operations manual
<b>FONA</b>	Flag Office Naval Aviation
<b>FOP</b>	Final Operational Phase (of GAGAN - 1 year after IEP)
<b>FOQA</b>	Flight Operations Quality Assurance (US - FDM in Europe)
<b>Foreshore</b>	area between mean high water and mean low water (Springs in Scot)
<b>FORS</b>	fibre-optic rate sensor
<b>FP</b>	Framework Programme (EU) <i>6th FP (FP6) 2002-06.</i>
<b>FPA</b>	Flight Procedures Analysis (EGNOS)
<b>FPD</b>	flat panel display
<b>FPGA</b>	field-programmable gate array
<b>FPM</b>	flicker phase modulation
<b>FPS</b>	flight progress strip (ATC)
<b>FPU</b>	floating point unit (maths co-processor to speed up arithmetic tasks)
<b>FQIS</b>	fuel quantity indicator system (air)
<b>FRA</b>	Federal Railroad Administration (US)
<b>FRAME</b>	EC project to encourage implementation of Euro ITS Framework
<b>Framework Directive</b>	<i>Directive 2002/21/EC of the Euro Parliament and Council of 7 Mar 02 on a common regulatory framework for electronic comms networks and services.</i>
<b>FRC</b>	fast rescue craft flight reference card (check-list)



<b>FREER</b>	Free Route Experim'tal Encounter Resolution (EUROCONTROL Prog) <i>FREER-3 (1999) investigating delegation of ATC to a'craft via VDL-4.</i>
<b>FRIN</b>	Fellow of the Royal Institute of Navigation
<b>FRP</b>	Federal Radionavigation Plan (US) <i>Usually produced each even year.</i>
<b>FRPA</b>	fixed radiation/reception pattern antenna
<b>FRPA-GP</b>	FRPA ground plane
<b>FRS</b>	Federal Radionavigation Systems (US)
<b>FRUIT</b>	false replies unsynchronised in time (SSR garbling problem)
<b>FS</b>	fixed service (transmitter) (ITU)
<b>F<sub>s</sub></b>	fractostratus cloud
<b>FSA</b>	Formal Safety Assessment (shipping)
<b>FSD</b>	full-scale development
<b>FSDPS</b>	flight service data processing system
<b>FSF</b>	Flight Safety Foundation (US)
<b>FSINS</b>	FOG-based strapdown inerial navigation system
<b>FSIX</b>	Flight Safety Information Exchange (ICAO)
<b>FSK</b>	frequency-shift keying
<b>FSS</b>	fixed satellite services frequency-selective surface (for rf selection in nav/com systems)
<b>FST</b>	fuzzy set theory
<b>FTA</b>	fault tree analysis Federal Transit Administration (US) Freight Transport Association (UK)
<b>FTD</b>	flight training device
<b>FTE</b>	flight technical error
<b>FTK</b>	freight tonne kilometres (measures civil air actual freight traffic)
<b>FTL</b>	Flight Time Limitations (for aircrew - CAP 371 & EU OPS define)
<b>FTP</b>	File Transfer Protocol (Internet)
<b>FU</b>	smoke (met)
<b>FUA</b>	flexible use of airspace
<b>FVD</b>	floating vehicle data (from road vehicle gathering info)
<b>FY</b>	Fengyun metsat system (China)
<b>FZ</b>	freezing (met)
<b>G</b>	giga (SI unit multiplier of 10 <sup>9</sup> )
<b>G-band</b>	NATO radar band 4-6 GHz = 7.5-5 cm
<b>G-STAR</b>	GPS Spacial Temporal Anti-jam Receiver
<b>G/S</b>	groundspeed
<b>G1, G2</b>	GLONASS carrier frequencies/bands <i>Frequencies (MHz) are 1,591-1,610 (G1) and 1,240-1,256 (G2).</i>
<b>G3</b>	(or GPS+) GPS, GLONASS and Galileo

<b>GA</b>	general aviation <i>Executive and company aircraft; private and flying club aircraft; gliders, sport aviation and airships/balloons; aerial work.</i>
	ground antenna
<b>GAAC</b>	General Aviation Awareness Council (UK)
<b>GAARDIAN</b>	Web-enabled data-gathering sys for safety-critical activities (TSB)
<b>GaAs</b>	gallium arsenide
<b>GACC</b>	General Aviation Consultative Committee (CAA)
<b>GACF</b>	Ground Assets Control Facility (Galileo)
<b>GAD</b>	General Aviation Department (CAA SRG)
<b>GADEROS</b>	Galileo Demonstrator for Railway Operation System (ERTMS)
<b>GAFLEX</b>	Galileo Flight Experiment (Germany-Russia industrial team) <i>Trial of Galileo signal structure on a GLONASS-M in late 2002.</i>
<b>GAGAN</b>	GPS Aided GEO Augmented Navigation (Indian WAAS) <i>GPS Aided GEO Augmented Navigation-Technology Demonstration System (GAGAN-TDS).</i>
<b>GAGAN-TDS</b>	GAGAN Technology Demonstration System (ISRO and AAI)
<b>GAGE</b>	GPS at Geostationary Transfer Orbit Experiment <i>NASA/GPS JPO/DERA project using UK STRV (Oct 2000?).</i>
<b>GAIN</b>	Galileo Industries SA <i>Alcatel-Alenia (F) - 19%, Alcatel-Alenia (I) - 19%, Astrium GmbH (G) - 19%, Astrium Ltd (UK) - 19%, GSS (Sp) - 12%, Thales (F/G/UK) - 12%.</i>
<b>GAINR</b>	GPS-Aided Inertial Navigation Reference System
<b>GALA</b>	GALileo overall Architecture definition (Nov 99 - Dec 00)
<b>GALEWAT</b>	Galileo & EGNOS for Waterway Transport (part of RIS)
<b>GALILEAN</b>	Galileo Application Network (EC) <i>To foster the competitiveness of European manufacturers and service providers.</i>
<b>Galilei</b>	EC study on interoperability of Galileo with other nav/comms
<b>Galileo</b>	European GNSS (GNSS-2)(Proposed by EU on 10 Feb 99)
<b>GalileoSat</b>	ESA definition study contract (Nov 99 - Dec 00)
<b>GALLANT</b>	EC project to integrate GNSS for road safety and mobility
<b>GAMA</b>	General Aviation Manufacturers Association (US)
<b>GAMMA</b>	Project to produce an assisted L1 Galileo/GPS/EGNOS rx (GJU)
<b>GAMTA</b>	General Aviation Manufacturers and Traders Association (UK)
<b>GAN</b>	global area network (the ultimate wide area network)
<b>GAO</b>	General Accounting Office (US)
<b>GAP</b>	Ground Accident Prevention (FSF initiative)
<b>GAPAN</b>	Guild of Air Pilots and Air Navigators
<b>GARDA</b>	Project to develop GPS/Galileo rx (GJU)
<b>GARMIS</b>	Galileo project for support actions (GJU, May 05 - May 07)
<b>GARNET</b>	Galileo Applications and Research Network (EC NoE)

<b>GAS</b>	Government Access Service (of Galileo)
<b>GASCo</b>	General Aviation Safety Council (UK)
<b>GASG</b>	General Aviation Steering Group (CAA)
<b>GASIL</b>	General Aviation Safety Information Leaflet (CAA)
<b>GASP</b>	General Aviation Safety Plan
<b>GASRWG</b>	General Aviation Safety Review Working Group (CAA)
<b>GAST</b>	Galileo Architecture Support Team (Dec 99 - Apr 01)
<b>GAT</b>	general air traffic
<b>GATCA</b>	ATCOs' union in Greece
<b>GATCO</b>	Guild of Air Traffic Control Officers (UK)
<b>GATE</b>	Galileo Test and Development Environment (Germany)
<b>GATM</b>	Global Air Traffic Management (USAF programme)
<b>GATS</b>	Global Automotive Telematics Standard <i>Decided by the GATS Forum (23 companies, service-providers and universities). GATS 2 (1999) is an open standard for transferring traffic info, emergency call, breakdown, dynamic navigation and general info using GPS and GSM. Submitted for inclusion in CEN TC 278</i>
<b>GAUA</b>	Galileo adaptive user algorithm
<b>GAUSS</b>	Global AUgmentation for Satellite Systems <i>Concept of integratd navigation using core satellite-based and augmentation systems eg NEL5.</i>
<b>Gauss-Markov</b>	Component used to refine GPS ionospheric delay model
<b>GAWG</b>	General Aviation Working Group (CAA)
<b>Gb</b>	gigabyte (= 1,024 megabytes)
<b>GB</b>	gyro bearing (angular distance from GN to the object)
<b>GBAS</b>	Ground-Based Augmentation System
<b>GBAS-B</b>	Ground-Based Augmentation System Broadcast
<b>GBCN</b>	ground-based communications network
<b>GBEN</b>	ground-based external navigation (system)
<b>GC</b>	great circle (orthodrome) <i>The intersection of a sphere on the earth and a plane through its centre.</i> gyro course <i>Intended direction of movement (of the ship), defined by the angle between gyro north and the fore-and-aft line (of the ship), expressed in angular units from gyro north (000°).</i>
<b>GCA</b>	ground-controlled approach
<b>GCC</b>	Galileo Control Centre
<b>GCI</b>	ground-controlled interception
<b>GCS</b>	Ground Control Segment (Galileo)
<b>GDA</b>	GEBCO Digital Atlas

<b>GDF</b>	Geographic Data File <i>The European standard used to describe and transfer road networks and road-related data for the mapping industry.</i>
<b>GDGPS</b>	Global Differential GPS (US)
<b>GDOP</b>	geometric dilution of precision <i>The factor by which the accuracy of a 3-D fix and time are degraded by geometrical considerations.</i>
<b>GE</b>	gyro error correction <i>Correction of gyro heading error (inc speed error) of a gyro compass. Angle between TN and GN, from TN eastwards named E (+), westwards named W (-).</i>
<b>GEBCO</b>	General Bathymetric Chart of the Ocean (IHO project)
<b>GEC</b>	groundtrack equatorial crossing <i>Equatorial angle from the prime meridian to the location that a groundtrack intersects the equator when crossing from the southern to northern hemisphere.</i>
<b>GEMINUS</b>	Galileo European Multimodal Integrated Navigation User System <i>EC study to define Galileo services. Consortium led by Racal. Nov 99 - Dec 00.</i>
<b>GEMS</b>	GPS Environment Monitoring System (spectrum analyser for GPS)
<b>GENESIS</b>	Galileo Euro Network of Experts to Support the Euro CommISsion <i>Nov 99 - Nov 03.</i>
<b>GEO</b>	geosynchronous equatorial orbit <i>Satellite height of 36,000 km in equatorial plane.</i>
	Group on Earth Observations <i>International group formed in 2003 to coordinate other EO groups.</i>
<b>Geocentric lat</b>	<i>Angle at the centre of of the reference ellipsoid between the celestial equator and the radius vector to a point on the ellipsoid.</i>
<b>Geocentric lon</b>	<i>Angle between the plane of the geocentric prime meridian and the plane of a point's geocentric meridian.</i>
<b>Geodesy</b>	<i>Science concerned with surveying and mapping the earth's surface to determine, e.g., its exact size, shape and gravitational field.</i>
<b>Geodetic accuracy</b>	<i>The accuracy of a position with respect to the geodetic coordinates of the earth (IMO).</i>
<b>Geodetic datum</b>	<i>A set of parameters specifying the reference coordinate system used for geodetic control in the calculation of coordinates of points on the earth (ISO).</i>
<b>Geodetic lat</b>	<i>Angular distance between the plane of the geodetic equator and the normal to a point on the earth ellipsoid.</i>
<b>Geodetic lon</b>	<i>Angular distance between the plane of the geodetic prime meridian and the plane of a point's geodetic meridian.</i>
<b>Geographic accuracy</b>	<i>The accuracy of a position with respect to the geographic coordinates of the earth (IMO).</i>

<b>GEOLUT</b>	GEostationary Orbit Local User Terminal
<b>GeoRSS</b>	Geospacial Really Simple Syndication (for position-related data)
<b>GEOSTAR</b>	geostationary satellites of COSPAS-SARSAT
<b>GES</b>	ground earth station
<b>GETR</b>	Galileo Experimental Test Receiver (for GIOVE satellites)
<b>GFE</b>	government-furnished equipment
<b>GFS</b>	Galvani-Faraday-Sense (of earth's magnetic field)
<b>GGC</b>	Galileo Global Component
<b>GGTO</b>	GPS-Galileo Time Offset
<b>GH</b>	gyro heading <i>Actual direction in which the longitudinal axis (of the ship) is pointed, defined by the angle between gyro north and the fore-and-aft line (of the ship), expressed in angular units from gyro north (000°).</i>
<b>GHA</b>	Greenwich Hour Angle
<b>GHRSSST-PP</b>	Global High-Resolution Sea Surface Temperature Pilot Project
<b>GHz</b>	gigahertz (1,000,000,000 cycles per second)
<b>GI</b>	geographic information
<b>GIA</b>	GBAS Interoperability Analysis (EGNOS)
<b>GIAC</b>	GPS Interagency Advisory Council (US)
<b>GIACC</b>	Group on International Aviation and Climate Change (ICAO)
<b>GIANT</b>	Geodetic Infrastructure for Antarctica GNSS Introduction in the Aviation Sector (EC proj from Jul 05) GPS Interference and Navigation Tool (US)
<b>GIC</b>	GNSS/Ground Integrity Channel
<b>GIF</b>	Graphics Interchange Format (used on Web)
<b>GIFTSS</b>	Government Information from the Space Sector (UK BNSC)
<b>GIM</b>	global ionosphere map (from IGS)
<b>GIMOS</b>	GNSS Interference Monitoring System
<b>GINA</b>	GNSS for INnovative road Applications
<b>GINs</b>	global inertial navigation system (GPS and inertial)
<b>GIOVE</b>	Galileo In-Orbit Validation Element (GSTBV2A/B)
<b>GIP</b>	Government Industry Partnership (US) (=PPP)
<b>GIPA</b>	Galileo Integrity Performance Assessment
<b>GIR</b>	groundwave-to-interference ratio
<b>GIRASOLE</b>	SoL GPS/EGNOS/Galileo 24 ch rx for air, maritime and rail (GJU)
<b>GIS</b>	geographical information system
<b>GISIC</b>	Geographical Information Systems International Group
<b>GISM</b>	GPS Scintillation Model/Monitor
<b>GISMO</b>	GNSS Integrity and Signal Monitoring Observatory <i>System to monitor and record GPS accuracy and outages.</i>
<b>GISPE</b>	Geographic Information Service Providers in Europe

<b>GISS</b>	Galileo Interim (management) Support Structure
<b>GITA</b>	GPS Interference Testing Approval
<b>GIVD</b>	grid ionospheric vertical delay (eg in WAAS)
<b>GIVE</b>	Geographical Information Vendors Europe
	grid ionospheric vertical error (eg in WAAS)
<b>GIWA</b>	Global International Waters Assessment
<b>GIWG</b>	GPS International Working Group (US, State Dept chair)
<b>GJU</b>	Galileo Joint Undertaking (to become GSA)
<b>GL</b>	Germanischer Lloyd (classification society)
<b>GLA</b>	General Lighthouse Authority (CIL, NLB, TH)
<b>GLAN</b>	geographic longitude of the ascending node (of a satellite orbit) <i>Equatorial angle from the prime meridian to the ascending node.</i>
<b>GLESOC</b>	Generic Local Element Service and Operating Centre (GNSS)
<b>GLF</b>	General Lighthouse Fund <i>Meets the costs of the GLAs. Derives income mainly from light dues charged on commercial shipping calling at UK &amp; Rep of Ireland ports.</i>
<b>GLONASS</b>	GLObal NAVigation Satellite System <i>Russian Federation's Global'naya Navigatsionaya Sputnikova Sistema. Equivalent of GPS. Spec is 24 sats in 3 x 64.8° orbital planes at 19,100 km altitude giving 11 h 15 m orbit time. 13 operational 2007.</i>
<b>GLONASS-K</b>	Third generation GLONASS system <i>Satellites are smaller and lighter with 10-year operational life. 2005-22.</i>
<b>GLONASS-KM</b>	Fourth generation GLONASS system <i>Requirement generated in 2002 for deployment 2015-35.</i>
<b>GLONASS-M</b>	Second generation GLONASS system <i>Satellites are smaller and lighter with 7-year operational life. First launch of 1 sat on 1 Dec 01. Op deployment 2003-13.</i>
<b>GLORIA</b>	GNSS & Loran-C in Road & Rail Applications (EC)
<b>GLOSS</b>	Global Sea Level Observing System <i>Research programme coordinated by the IOC.</i>
<b>GLRT</b>	generalised likelihood ratio test
<b>GLS</b>	GPS/GNSS Landing System <i>Precision approach equivalent to ILS. Requires 40 m HAL and 12 m VAL protection and will be available from LAAS (or WAAS with L5 frequency available).</i>
<b>GM</b>	Gauss-Markov (form of Kalman filter)
<b>GMC</b>	ground movement controller (ATC)
<b>GMDSS</b>	Global Maritime Distress & Safety System (see Sea Areas)
<b>GMES</b>	Global Monitoring on Environment and Security (EU/ESA sats)
<b>GML</b>	Geography Mark-up Language <i>Format for digital mapping - eg OS MasterMap Address Layer 2.</i>

<b>GMO</b>	Geospatial Management Office (US)
<b>GMS</b>	Ground Mission Segment (Galileo) Ground Monitor Station (MSAS)
<b>GMSK</b>	gaussian minimum shift keying <i>Typically allows 8 kbps to be transmitted over a 12.5 kHz channel.</i>
<b>GMSP</b>	Global Multimission Service Platform (USA) <i>Could represent 8 satellites giving both higher-power GPS and comms. The 8 could replace the same number of current GPS sats at about the time of introduction of GPS III.</i>
<b>GMT</b>	Greenwich Mean Time <i>May be regarded as the general equivalent of UT1.</i>
<b>GMU</b>	GPS-based monitoring unit <i>US system for checking aircraft navigation performance.</i>
<b>GN</b>	grid north <i>Northerly direction indicated by the gyro-compass 000° index.</i>
<b>gnd</b>	ground
<b>GNE</b>	gross navigational error
<b>GNS</b>	Ground Network System (US ATC)
<b>GNSS</b>	Global Navigation Satellite System <i>Generic term for satellite navigation systems. GNSS-1 covers GPS and GLONASS augmented with additional ranging, differential and integrity signals (eg EGNOS, MSAS, WAAS). GNSS-2 should include GPS III and Galileo. Covered by IMO Res. A.860(20) 'Maritime Policy for the Future GNSS'.</i>
<b>GNSS/CN</b>	Global Navigation Satellite System/Cellular Network
<b>GNSS/GSM</b>	Global Navigation Satellite System/Global System for Mobile Comms
<b>GNSSP</b>	Global Navigation Satellite Systems Panel (ICAO)
<b>GO</b>	geometrical optics
<b>GOC</b>	Galileo Operating Company (concessionaire) General Operator's Certificate (GMDSS)
<b>GOCE</b>	Gravity Filed and Steady State Ocean Circulation Explorer (ESA)
<b>GODAE</b>	Global Ocean Data Assimilation Experiment
<b>GOERS</b>	GPS Outage En Route Simulation (FAA experiment 2002)
<b>Goes</b>	Geostationary Operational Environmental Satellite <i>Geos-M carries the SXI.</i>
<b>Gold Code</b>	Unique pseudo-random code used by each GPS satellite
<b>GONG</b>	Global Oscillation Network Group (track sunspots)
<b>GOTS</b>	GPS Outage Terminal Simulation (FAA experiment 2003)
<b>GOV</b>	GNSS-1 Operational Validation (EUROCONTROL)
<b>GP</b>	general purpose glidepath
<b>GP&amp;C</b>	global position & communication
<b>GPAT</b>	Generic Performance Analysis and Trending (EGNOS)

<b>GPC</b>	GIOVE Processing Centre <i>Located at ESA's European Space Research and Technology Centre (ESTEC) in Noordwijk, Netherlands.</i>
<b>GPIP</b>	glidepath intercept point (of landing aircraft)
<b>GPMS</b>	GPS Performance Monitoring System (UK NATS)
<b>GPO</b>	GPS (Joint) Program Office (US)
<b>GPRS</b>	General Packet Radio Service (GSM-based protocol; '2.5G') <i>Mobile phone protocol from 2000 using packet switching at 171.2 kbps.</i>
<b>GPS</b>	Global Positioning System (NAVSTAR) <i>Spec is 21 + 3 sats in 6 orbital planes at 55° inclination and 20,200 km altitude, giving 12 h orbits.</i>
<b>GPS III</b>	Next generation GPS (first launch 2013?)
<b>GPS Time</b>	Time to which GPS signals are referred <i>A composite of all monitor and satellite system clocks, steered over a period to keep within 1 microsec of UTC, ignoring UTC leap seconds. Equalled UTC in Jan 80; on 1 Jan 06 was ahead of UTC by 14 secs.</i>
<b>GPS Week</b>	Modulo 1,024 number of elapsed GPS weeks <i>Began 6 Jan 80 with first roll-over on 22 Aug 99.</i>
<b>GPS-CV</b>	GPS Common View (mode of operating for time transfer)
<b>GPS/GSM</b>	Global Positioning System/Global System for Mobile Communication
<b>GPS+</b>	(or G3) GPS, GLONASS and Galileo
<b>GPSDO</b>	GPS disciplined oscillator (free runs if GPS unavailable)
<b>GPSOC</b>	GPS Operations Center (USAF - SCHRIEVER AFB)
<b>GPTS</b>	Global Positioning and Timing Service
<b>GPU</b>	graphics processing unit
<b>GPWS</b>	Ground Proximity Warning System
<b>GR</b>	hail >5 mm (met)
<b>GRACE</b>	Generalised Rules for Advanced Constellation Evaluation Gravity Recovery and Climate Experiment (NASA)
<b>GRADU</b>	gradual (met reports)
<b>GRAIL</b>	Galileo introduction in the RAIL sector
<b>GRAM</b>	GPS receiver application module
<b>GRAPE</b>	GPS Routine for Attitude Parameter Estimation <i>Software package for processing GPS signals.</i>
<b>GRAS</b>	GPS Receiver for Atmospheric Sounding Ground-based Regional Augmentation System (GPS)(Australia,
<b>GRC</b>	Geospacial Research Centre (Christchurch, NZ) <i>Joint venture between U of Nottingham (UK) and U of Canterbury (NZ). Formed Nov 06.</i>
<b>GREAT</b>	Galileo REceiver for the mAss markeT <i>2-year, E6 million project under EC FP6. Led by PA Consulting Gp.</i>



<b>GRI</b>	Group Repetition Interval (LORAN-C/eLORAN) <i>Integer in range 4,000 to 9,999. Time interval between pulse groups in 10s of microseconds.</i>
<b>GRINGO</b>	GPS RINEX Generator (IESSG)
<b>GRM</b>	GPS receiver module
<b>gross error</b>	<i>Or 'outlier' is error other than random or systematic error. Often large and, by definition, unpredictable (After IMO).</i>
<b>GRP</b>	glass reinforced plastic
<b>GRR</b>	ground reference receiver
<b>GRT</b>	gross registered tonnage
<b>GS</b>	glideslope
<b>GSA</b>	GNSS Supervisory Authority (took over from GJU)
<b>GSB</b>	Galileo Security Board
<b>GSC</b>	Galileo Security Committee
<b>GSDI</b>	Global Spatial Data Infrastructure
<b>GSE</b>	ground support equipment
<b>GSJ</b>	Geographical Survey Institute (Japan)
<b>GSM</b>	Groupe Speciale Mobile or Global System for Mobile <i>Digital mobile phone structure also allowing 160-character alphanumeric messages (SMS). Uses narrow-band TDMA giving 8 slots per frequency at 9.6 kbps.</i>
<b>GSM-R</b>	GSM-Railway (part of ERTMS) <i>Secure voice/data comms between drivers &amp; signallers (UK in 2013?).</i>
<b>GSO</b>	geo-synchronous orbit
<b>GSOS</b>	GPS Surface Observing System (US)
<b>GSPS</b>	Global System Performance Specifications (ICAO)
<b>GSS</b>	Galileo Sensor Station geospatial server (central server for real-time traffic guidance)
<b>GSSB</b>	Galileo System Security Board
<b>GSSF</b>	Galileo System Simulation Facility (ESA)
<b>GST</b>	Galileo System Time (spec within 50 ns 95%) Greenwich Siderial Time
<b>GSTARS</b>	Ground Safety Tracking and Reporting System (for airfields)
<b>GSTB</b>	Galileo System Test Bed
<b>GSTBV2A</b>	Galileo System Test Bed Vehicle 2A (GIOVE-A) <i>To secure Galileo frequency filing and provide a test SIS. Soyuz launched Dec 05, 27 month life. Surrey Satellite Technologies Ltd.</i>
<b>GSTBV2B</b>	Galileo System Test Bed Vehicle 2B (GIOVE-B) <i>To secure Galileo frequency filing and provide a test SIS. EADS Astrium. To launch Sep 06?</i>
<b>GSVF</b>	Galileo Signal Validation Facility
<b>GSVF</b>	Galileo Signal Validation Facility (ESA)
<b>GT</b>	gross tonnage/tons

	ground track (intended path of ship's movement over ground)
<b>GTP</b>	Global Telematics Protocol
	GPS translator processor (of TGRS)
<b>GTR</b>	Group Time Reference (LORAN-C)
<b>GTRF</b>	Galileo Terrestrial Reference Frame (based on ITRF96)
<b>GTRS</b>	Galileo Terrestrial Reference System
<b>GTS</b>	Global Telecommunications System
<b>GTSP</b>	Galileo Time Service Provider
<b>GUI</b>	graphical user interface
<b>GUST</b>	Galileo User Support Transport <i>EC project for Galileo receivers.</i>
<b>GWGGTI</b>	GalileoSat WG on the Galileo Time Interface
<b>GWS</b>	GPS wavefront simulator
<b>h</b>	hecto (SI unit multiplier of $10^2$ )
<b>H</b>	henry (inductance in Wb/A)
<b>H-band</b>	NATO radar band 6-8 GHz = 5-3.75 cm
<b>H-field</b>	magnetic-field (eg of aerial)
<b>H24</b>	continuous round-the-clock operation
<b>HA</b>	harbour authority Highways Agency (established by UK Government in 1994)
<b>HA-NDGPS</b>	High Accuracy Nationwide DGPS (US)
<b>HAGR</b>	high-gain GPS receiver
<b>HAL</b>	horizontal alert limit/level (eg for WAAS precision approach etc)
<b>HALE</b>	high altitude long endurance (vehicle such as balloon or airship)
<b>HAP</b>	high altitude platform (stratospheric GNSS augmentation platform) <i>eg Helios UAV at 20 km altitude.</i>
<b>HAT</b>	height above terrain
<b>HAZMAT</b>	hazardous material
<b>HBL</b>	hydrostatic balanced loading
<b>HCAA</b>	Hellenic Civil Aviation Authority
<b>HCMM</b>	The Honourable Company of Master Mariners
<b>HCRF</b>	hydrographic chart raster format
<b>HCS</b>	heading control system
<b>HD</b>	head direction (used in animal navigation)
<b>HDC</b>	Hydrographic Data Centre (UK)
<b>HDD</b>	head-down display
<b>HDG</b>	heading (course) <i>Angle measured in horizontal plane from a reference direction, counted clockwise from 000° through 360°, written as a 3 digit number.</i>
<b>HDLC</b>	high-level data link control/communication

<b>HDOP</b>	horizontal dilution of precision <i>The factor by which a two-dimensional fix in a horizontal plane is degraded by geometrical considerations.</i>
<b>HEA</b>	harbour entrance and approach
<b>HEAP</b>	Human Element Analysing Process (IMO)
<b>HELCOM</b>	Helsinki Commission (Baltic Marine Environment Protection Comm) <i>To protect marine environment. Denmark, Estonia, EU, Finland, Germany, Latvia, Lithuania, Poland, Russia &amp; Sweden.</i>
<b>HeliNet</b>	Proposed network of unmanned solar-powered stratospheric <i>Project funded by EC Fifth Framework for environmental surveillance, broadband services and positioning.</i>
<b>HEO</b>	highly-elliptical orbit (typically 1,500-40,000 km)
<b>HEROE</b>	Harmonisation of European Rail Rules for Operating ERTMS (EU)
<b>HEX</b>	Horizontal Expansion (programme - eg coverage of 8.33 kHz)
<b>HF</b>	high frequency (3-30 MHz) (decametric waves) human factors
<b>HFDL</b>	high frequency datalink
<b>HFM</b>	Human Factors and Medicine Panel (NATO RTO)
<b>Hg</b>	Refers to inches of mercury for atmospheric pressure <i>ISA 1013.2 mB or hPa = 29.92 ins Hg.</i>
<b>HGA</b>	high gain antenna
<b>HGE</b>	Harmonisation Group on ECDIS
<b>HGMIO</b>	Harmonisation Group on Marine Information Objects (IHO-IEC)
<b>HGS</b>	head-up guidance system
<b>HGV</b>	heavy goods vehicle
<b>HHP</b>	high holding power (anchors)
<b>HHS</b>	Hodgkin-Huxley-Sense (of earth's magnetic field)
<b>HI</b>	High Integrity (Galileo service)
<b>HIAL</b>	high intensity approach lighting
<b>HIDSS</b>	helmet integrated display sighting system (for aircrew)
<b>HIPS</b>	Highly-Interactive Problem Solver (EUROCONTROL) <i>Software for real-time air traffic management.</i>
<b>HIRF</b>	high intensity radio frequency
<b>HIRL</b>	high intensity runway lighting
<b>HIRLAM</b>	High Resolution Limited Area Model (to estimate tropospheric delay)
<b>HISL</b>	high-intensity strobe light
<b>HITL</b>	hardware-in-the-loop
<b>HL</b>	heading line (radar)
<b>HLD</b>	high level definition (document)
<b>HLG</b>	High Level Group
<b>HLS</b>	helicopter landing site
<b>HMAC</b>	Hazardous Materials Advisory Council

<b>HMD</b>	helmet-mounted display
<b>HMI</b>	hazardously misleading information human-machine interface/interaction
<b>HMLR</b>	Her Majesty's Land Registry (UK)
<b>HMR</b>	helicopter main route
<b>Hmr</b>	homer
<b>HMU</b>	health monitoring unit height-monitoring unit <i>Ground-based unit for very accurately checking on aircraft height.</i>
<b>HNS</b>	Hazardous and Noxious Substances (IMO Protocol)
<b>HNSE</b>	horizontal navigation system error
<b>HO</b>	height observed hydrographic office
<b>HOB</b>	Hydrographic Office Board (UK)
<b>HoE</b>	height of eye
<b>HOL</b>	high order language
<b>HOMER</b>	homing marine environmental recorder
<b>Hon FRIN</b>	Honorary Fellow of the Royal Institute of Navigation
<b>HOT</b>	High Occupancy/Toll (eg lanes on motorway)
<b>HOTAS</b>	hands on throttle and stick (ergonomic cockpit technology)
<b>HOW</b>	hand-over word
<b>HP</b>	High Precision (GLONASS military service) high pressure holding point
<b>hPa</b>	hectopascal <i>Supersedes the millibar. 1mB = 100 pascals = 1 hPa.</i>
<b>HPA</b>	high power amplifier
<b>HPL</b>	horizontal protection limit
<b>HPZ</b>	helicopter protected zone
<b>HR</b>	high risk (marine)
<b>hr</b>	hour
<b>HRA</b>	high risk area (marine) human reliability analysis
<b>HRG</b>	Hemispherical Resonator Gyro (vibratory gyro for IMU - N Grumman)
<b>HRS</b>	height reference surface
<b>HRU</b>	hydrostatic release unit
<b>HRV</b>	high risk vessel (marine)
<b>HS</b>	high sensitivity (eg GPS receiver)
<b>HSA</b>	Hilbert spectral analysis
<b>HSB</b>	hue, saturation, brightness (system of specifying display colours)
<b>HSC</b>	high speed craft

	Homeland Security Council (US)
<b>HSC Code</b>	International Code of Safety for High Speed Craft (IMO)
<b>HSE</b>	Health and Safety Executive (UK) health, safety and environmental
<b>HSGPS</b>	high sensitivity GPS
<b>HSI</b>	Homeland Security Institute (US) horizontal situation indicator
<b>HSPDA</b>	high speed downlink packet access (mobile phones)
<b>HSWA</b>	Health and Safety at Work Act (UK)
<b>HTML</b>	HyperText Mark-up Language (for Web pages)
<b>HTTP</b>	HyperText Transfer Protocol
<b>HTZ</b>	helicopter traffic zone
<b>HUD</b>	head-up display (HUD-LCD uses liquid crystal display)
<b>HUNE</b>	horizontal component of the user navigation error
<b>HUNGAGI</b>	Hungarian Association for Geo-information
<b>HV</b>	host vehicle
<b>HW</b>	hardware high water
<b>HX</b>	holding to fix
<b>HZ</b>	haze (met)
<b>Hz</b>	Hertz (cycles per second)
<b>HZA</b>	high zenith antenna (eg GPS for elevation >35°)
<b>I</b>	in-phase component
<b>I-3, I-4</b>	Inmarsat 3rd or 4th generation satellites <i>I-4s in at 54°W (Atlantic W) and 64°E (Indian Ocean) in 2007 with 3rd as spare on ground. Carry navigation package, 200 spot beams and comms up to 432 kbps.</i>
<b>I-band</b>	NATO radar band 8-10 GHz = 3.75-3 cm
<b>I-Level</b>	intermediate level
<b>I-NMF</b>	Integrity Network Management Facility (Galileo)
<b>I&amp;D</b>	integrate and dump (correlator function in satnav rx)
<b>I<sup>2</sup>S</b>	integrated information system
<b>IAA</b>	International Academy of Astronautics
<b>IAC</b>	Information-Analytical Center (Russia - for satnav)
<b>IACA</b>	International Air Carriers Association (of non-scheduled airlines)
<b>IACS</b>	International Association of Classification Societies (London)
<b>IADC</b>	International Association of Dredging Companies
<b>IAEA</b>	International Atomic Energy Agency
<b>IAF</b>	International Astronautical Federation <i>Founded in 1951, now has 165 non-governmental corporate members from 44 states (2003). Based in Paris.</i>
<b>IAG</b>	International Association of Geodesy

<b>IAIN</b>	International Association of Institutes of Navigation <i>Institutes (2007): Australia, Austria, China, Czech Republic, DPR Korea, Egypt, France, Germany, Italy, Japan, Korea, Netherlands, Nordic, Poland, Portugal, Russia, Spain, Switzerland, UK, US.</i>
<b>IALA</b>	International Association of Lighthouse Authorities <i>Comprises some 82 national lighthouse authorities plus associate and industrial members. UK represented by Trinity House, Northern Lighthouse Board &amp; Irish Lights. Formed 1957. Full title 'International Association of Marine Aids to Navigation and Lighthouse Authorities'. AISM in French.</i>
<b>IALPA</b>	Irish Air Line Pilots' Association
<b>IAMF</b>	International Aeronautical Monetary Fund (ICAO) <i>Proposal to pay for the implementation of CNS/ATM in poorer countries.</i>
<b>IAN</b>	Instituto Argentino de Navegacion
<b>IAOPA</b>	International Aircraft Owners and Pilots Association (55 states 01)
<b>IAP</b>	instrument approach procedure
<b>IAPH</b>	International Association of Ports and Harbours
<b>IAPSO</b>	International Association for the Physical Sciences of the Ocean
<b>IAS</b>	indicated airspeed
<b>IASA</b>	International Aviation Safety Assessment (FAA programme)
<b>IASC</b>	International Arctic Science Committee
<b>IASST</b>	International Association for Safety and Survival Training
<b>IATA</b>	International Air Transport Association <i>Based in Montreal. Founded in 1947. Represent ~250 airlines comprising 94% of international scheduled air traffic.</i>
<b>IAWP</b>	initial approach waypoint
<b>IBAN</b>	Internet-Based Augmentation System (a WAAS using www)
<b>IBC</b>	International Bathymetric Chart
<b>IBC Code</b>	International Bulk Carriers' Code <i>Includes equipment in ships carrying dangerous chemicals in bulk.</i>
<b>IBCS</b>	integrated bridge control system
<b>IBCU</b>	inboard computer unit
<b>IBIS</b>	intelligent bus for inertial sensor
<b>IBIT</b>	initiated built-in test
<b>IBLS</b>	Integrity Beacon Landing System (using pseudolite)
<b>IBn</b>	identification beacon
<b>IBS</b>	integrated bridge system
<b>IC</b>	ice crystals (met) interrogator code (SSR Mode S)
<b>ICA</b>	International Cartographic Association
<b>ICAA</b>	Iceland Civil Aviation Administration
<b>ICAM</b>	Integrated Coastal Area Management

<b>ICAO</b>	International Civil Aviation Organisation (188 nations in 2003)
<b>ICAO (EUR/NAT)</b>	ICAO (European & North Atlantic Region)(ECAC + 11 = 49 states)
<b>ICAV</b>	Integrated Common Analytical Viewer (USA DHS)
<b>ICB</b>	industrial consultation body
<b>ICC</b>	integrated control system integrity control centre (Galileo)
	International Cartographic Conference (ICA)
	International Certificate of Competence
	International Chamber of Commerce
<b>ICCL</b>	International Council of Cruise Lines
<b>ICCS</b>	Integrated Coastguard Communications System
<b>ICD</b>	interface control document
<b>ICES</b>	International Council for the Exploration of the Sea
<b>ICF</b>	initial contact frequency (ATC) Integrity Control Facility (Galileo)
<b>ICFTU</b>	International Confederation of Free Trade Unions
<b>ICG</b>	International Committee on Global Navigation Satellite Systems <i>China, India, Italy, Japan, Nigeria, Russia, US, BIPM, CGSIC, COSPAR, EUPOS, ESA, FIG, IAG, IAIN, ICA, ICSU, IERS, IGS, ISPRS, ITU, URSI, UNOOSA (2008).</i>
<b>ICHCA</b>	International Cargo Handling Co-ordination Association
<b>ICI</b>	inter-carrier interference (comms etc)
<b>ICMA</b>	International Christian Maritime Association
<b>ICNS</b>	integrated communication, navigation and surveillance
<b>ICOMIA</b>	International Council of Marine Industry Associations
<b>ICS</b>	initial control system Institute of Chartered Shipbrokers International Chamber of Shipping (London-based) International Code of Signals International Commission on Shipping
<b>ICSU</b>	International Council for Science
<b>ICT</b>	information and communication technology
<b>ICZM</b>	Integrated Coastal Zone Management (UK)
<b>ICZMap</b>	Integrated Coastal Zone Mapping (UK OS project 2004-06)
<b>ID</b>	identification
<b>IDDN</b>	Integrity Data Dissemination Network (Galileo)
<b>IDIQ</b>	indefinite delivery, indefinite quantity (contract)
<b>IDM</b>	improved data modem
<b>IDP</b>	information data processing
<b>IDS</b>	integrated display system integrity determination system

<b>IEC</b>	International Electrotechnical Commission (est 1906) <i>Based in Geneva. Sets standards for electrotechnical devices. IEC 61108-1 (1996-06) applies to GPS. Members from 65 countries, 172 Tech Ctees, 5,000 international stds published.</i>
<b>IEE</b>	Institute of Electrical Engineers (became IET) (UK)
<b>IEEE</b>	Institute of Electrical and Electronic Engineers (US)
<b>IEG</b>	Information Exchange Group (CIL, THLS and NLB)
<b>IEP</b>	Initial Experimental Phase (of GAGAN - 1 year after TDS)
<b>IERS</b>	International Earth Rotation Service
<b>IES</b>	inverted echo sounder
<b>IESSG</b>	Institute of Engineering Surveying and Space Geodesy <i>At the University of Nottingham.</i>
<b>IET</b>	Institute of Engineering Technology (was IEE)
<b>IETF</b>	Internet Engineering Task Force
<b>IETT</b>	Institute of European Trade and Technology
<b>IF</b>	inertial frame initial fix instrument flying integrity flag (GNSS) intermediate frequency
<b>iFACTS</b>	Interim Future Area Control Tools Support (UK NATS) <i>Advanced support tools to enable ATC controllers to increase amount of traffic they can handle.</i>
<b>IFALPA</b>	International Federation of Airline Pilots' Associations
<b>IFATCA</b>	International Federation of Air Traffic Controllers' Associations <i>Represents ~ 40,000 air traffic controllers in &gt;100 countries.</i>
<b>IFCS</b>	integrated flight control system
<b>IFEN</b>	Institute of Geodesy and Navigation (Univ FAF Munich, Germany)
<b>IFF</b>	Identification Friend or Foe (system)
<b>IFFAS</b>	International Financial Facility for Aviation Safety
<b>IFFT</b>	Inverse Fast Fourier Transform
<b>IFN</b>	Institut Français de Navigation
<b>IFO</b>	intermediate fuel oil
<b>IFOG</b>	interferometric fibre-optic gyro
<b>IFR</b>	instrument flight rules
<b>IFSMA</b>	International Federation of Shipmasters' Associations (London base)
<b>IFTA</b>	instrument flying training area
<b>IGA</b>	international general aviation <i>All international civil aviation ops other than scheduled air services and non-scheduled air transport ops for remuneration or hire.</i>
<b>IGC Code</b>	International Gas Carriers' Code <i>Includes equipment in ships carrying liquified gases in bulk.</i>



<b>IGEB</b>	Interagency GPS Executive Board (disestablished) <i>Replaced by the National Space-Based Positioning, Navigation and Timing (PNT) Executive Committee Aug 05.</i>
<b>IGEMS</b>	Improved GEMS
<b>IGEX</b>	International GLONASS Experiment
<b>IGN</b>	French National Geographic Institute
<b>IGO</b>	inter-governmental organisation
<b>IGP</b>	ionospheric grid point
<b>IGS</b>	instrument guidance system International GNSS Service
<b>IGSAGS</b>	Integrated Global Surveillance and Guidance System
<b>IGSO</b>	inclined geosynchronous orbit <i>Satellite height of 36,000 km inclined to equatorial plane.</i>
<b>IHB</b>	International Hydrographic Bureau
<b>IHO</b>	International Hydrographic Organisation <i>Inter-governmental organisation established in 1921. 73 nations in Feb 01. Based in Monaco.</i>
<b>IHPT</b>	Instituto Hidrográfico (Portugese Navy Hydrographic Institute)
<b>II</b>	Interrogator Identifier (SSR Mode S code)
<b>IIAR</b>	instantaneous integer ambiguity resolution
<b>IIM</b>	Instituto Idrografico della Marina (Italian Hydrographic Office)
<b>IIMS</b>	International Institute of Marine Surveyors
<b>IIN</b>	Italian Institue of Navigation
<b>IISC</b>	International Information Sub-Committee (of CGSIC)
<b>IISL</b>	International Institute of Space Law
<b>IKD</b>	in-kind delivery <i>Contribution to a project in-kind rather than by direct funding.</i>
<b>IKLT</b>	Inverse-Karthunen-Loève-Transformation
<b>ILA</b>	International Loran Association
<b>ILAMA</b>	International Life-saving Appliances Manufacturers' Association
<b>ILF</b>	International Lifeboat Federation
<b>ILO</b>	International Labour Organisation (deals with marine crewing issues)
<b>ILS</b>	Instrument Landing System International Launch Services (Russia - use Baikonur Cosmodrome)
<b>ILT</b>	Institute of Logistics and Transport (UK - CILT from May 2004)
<b>IM</b>	integrity monitoring
<b>IMA</b>	integrated modular avionics
<b>IMarE</b>	Institute of Marine Engineers (became IMarEST in 2001)
<b>IMarEST</b>	Institute of Marine Engineering, Science and Technology (was
<b>IMB</b>	International Maritime Bureau
<b>IMC</b>	instrument meteorological conditions
<b>IMCA</b>	International Marine Contractors Association

<b>IMDG Code</b>	International Maritime Dangerous Goods Code (IMO)
<b>IMEC</b>	International Maritime Employers' Committee
<b>IMERP</b>	Implementation of the European Radionavigation Policy
<b>IMLA</b>	integrated multipath-limiting antenna International Maritime Lecturers Association
<b>IMO</b>	International Maritime Organisation <i>A UN body formed in 1959 and based in London. 168 members (2008).</i>
<b>IMP</b>	Integrated Maritime Policy (EU)
<b>IMPA</b>	International Maritime Pilots' Association
<b>IMPACT</b>	ATCOs' union in Ireland
<b>IMS</b>	Incident Management System integrity monitor station (eg Galileo)
<b>IMSO</b>	International Mobile Satellite Organisation <i>An intergovernmental body to oversee Inmarsat's delivery of its public service obligations, including GMDSS.</i>
<b>IMT 2000</b>	International Mobile Telecommunications for 2000 and beyond <i>An ITU concept for provision of advanced mobile telecommunications services on a worldwide scale regardless of location, network or terminal used.</i>
<b>IMTA</b>	International Map Trade Association
<b>IMU</b>	inertial measurement unit
<b>IN-RAR</b>	interferometric real aperture radar
<b>IN-SAR</b>	interferometric synthetic aperture radar
<b>INA</b>	International Navigation Association
<b>iNavSat</b>	Consortium bidding for Galileo concession <i>EADS Space, Inmarsat &amp; Thales.</i>
<b>INCOSE</b>	International Council on Systems Engineering
<b>INE</b>	Instituto de Navegacion de Espana
<b>INITIATIVE</b>	EU Project for electronic fee collection using GNSS
<b>INLS-Code</b>	International Noxious Liquid Substances Code
<b>INM</b>	Internet Notices to Mariners
<b>Inmarsat</b>	INternational MARitime SATellite Organisation <i>Established by convention on 3 Sep 76, with 86 member governments by 1999. Became a two-tier private company (Inmarsat Holdings and Inmarsat Ltd) on 15 Apr 99.</i>
<b>INPHORMM</b>	Info & Pub Helping the Objective of Reducing Motorised Mobility
<b>INS</b>	inertial navigation system integrated navigation system
<b>INSPIRE</b>	Infrastructure for Spatial Information in the EU <i>A database with consistent geographical data to improve mapping in Europe.</i>

<b>INTEG</b>	EGNOS Integration into Galileo <i>EC study to analyse a seamless transition from EGNOS to Galileo from tech, economical, ops and institutional views. Nov 99 - Dec 00.</i>
<b>integrated navigation system</b>	<i>A system in which the information from 2 or more navigation aids is combined in a symbiotic manner to provide an output which is superior to any one of the component aids (IMO).</i>
<b>integrity</b>	<i>The ability to provide users with warnings within a specified time when the system should not be used for navigation (IMO).</i>
<b>integrity risk</b>	<i>Probability that a user will experience a position error larger than the threshold value without an alarm being raised within specified time-to-alarm at any instant of time at any location within the coverage area (IMO). A typical figure is <math>10^7</math>.</i>
<b>INTELFRET</b>	intelligent freight train
<b>INTELLECT</b>	New name (2002) for FEI - Electronic Industry Trade Organisation
<b>INTER</b>	intermittent or fluctuating (met)
<b>Intercargo</b>	International Association of Dry Cargo Shipowners
<b>Intercept</b>	Intermodal Concepts in European Passenger Transport <i>EC DG TREN &amp; DG XIII project.</i>
<b>Interdecadal</b>	Between ten years or in groups of ten
<b>International NAVTEX</b>	Co-ordinated broadcast and automatic reception on 518 kHz <i>'of marine safety information by means of narrow-band direct-printing telegraphy using the English language.'</i>
<b>interoperability</b>	<i>The ability to communicate or transfer data between functional units running on different platforms, implemented in different technologies, using industry standard or widely accepted data description and communication protocols.</i>
<b>Intertanko</b>	International Association of Independent Tanker Owners
<b>INWAAS</b>	Indian WAAS
<b>IOC</b>	Initial Operational Capability <i>For GPS, 24 Block I/II/III satellites operating in assigned orbits and available for navigation use. Declared in 1994 for GPS, implying suitability for civil use.</i>
	Intergovernmental Oceanographic Commission
<b>IOD</b>	issue of data
<b>IODC</b>	issue of data, clock (GPS)
<b>IODE</b>	issue of data, ephemeris (GPS)
<b>IOG</b>	integrated optics gyro (technology beyond MEMS)
<b>IOI</b>	imminent obstacle impact (TAWS alert)
<b>IOLT</b>	Institute of Logistics and Transport
<b>IOM</b>	input/output module
<b>ION</b>	Institute of Navigation (US)
<b>ION-CH</b>	Swiss Institute of Navigation
<b>Ionosphere</b>	Part of atmosphere from ~ 120-350 km
<b>IOP</b>	Initial Operations Phase (eg EGNOS)

<b>IOPC</b>	International Oil Pollution Compensation Fund
<b>IOR</b>	Indian Ocean Region <i>Inmarsat III satellite at 64.5°E.</i>
<b>IORS</b>	integrated optical rotation sensor
<b>IOT&amp;E</b>	Initial Operational Test & Evaluation
<b>IOV</b>	in-orbit validation
<b>IP</b>	initial point (eg fix before run-in to target) instrumentation port Integrated Project (EU FP6) interlectual property Internet Protocol
<b>IPAB</b>	International Programme for Antarctic Buoys
<b>IPAX</b>	in-plane accelerometer
<b>IPC</b>	Industrial Policy Committee (ESA)
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>IPF</b>	Integrity Processing Facility (Galileo)
<b>iPLOT</b>	Intelligent Pervasive Location and Tracking (Leeds U)
<b>IPP</b>	ionospheric pierce point (for measuring ionospheric delay eg GPS)
<b>IPPA</b>	Innovative Portable Pilot Assistance (marine project)
<b>IPPS</b>	Intelligent Pedestrian Protection System (on cars)
<b>IPR</b>	intellectual property right
<b>IPTS</b>	International Port Traffic Signals
<b>IPTV</b>	Internet Protocol TV
<b>IPV</b>	instrument approach with vertical guidance
<b>IQ</b>	in-phase quadrature
<b>IR</b>	Implementing Rule (EASA) impulse radio (UWB) infrared Instrument Rating
<b>IRAC</b>	Interdepartmental Radio Advisory Committee (US)
<b>IRAC/SPS</b>	IRAC Spectrum Planning Sub-committee (US)
<b>IRAC/SSG</b>	IRAC Space Systems Group (US)
<b>IRB</b>	indoor reference beacon
<b>IRF</b>	International Road Federation
<b>IRI</b>	International Reference Ionosphere
<b>IRIG</b>	Inter Range Radio International Group <i>Provides continuous worldwide time coverage for navigation, time and frequency requirements.</i>
<b>IRLOGI</b>	Irish Organisation for Geographic Information
<b>IRNSS</b>	Indian Regional Navigation Satellite System <i>8 satellites operational in 2012?</i>

<b>IRPCS</b>	International Regulations for Preventing Collisions at Sea (1972) <i>Also known as COLREGs.</i>
<b>IRS</b>	inertial reference system
<b>IRT</b>	Independent Review Team (USAF)
<b>IRU</b>	inertial reference unit International Road Transport Union
<b>IS</b>	information system
<b>ISA</b>	Intelligent Speed Adaption (MIRA project 2002) International Standard Atmosphere <i>In basic terms sea-level pressure of 1013.2mb and temperature of +15°C, with temperature lapse rate of -1.98°C per 1,000ft to 36,090ft.</i>
<b>ISAF</b>	International Sailing Federation
<b>ISATA</b>	International Symposium on Automotive Technology & Automation
<b>ISDN</b>	Integrated Services Digital Network
<b>ISF</b>	International Shipping Federation Ltd (London-based)
<b>ISGOTT</b>	International Safety Guide for Oil Tankers and Terminals
<b>ISI</b>	inter-symbol interference (comms etc)
<b>ISIS</b>	integrated standby instrument system
<b>ISL</b>	inter-satellite link
<b>ISM</b>	International Safety Management (Code)(IMO) <i>Code for safe operation of ships and for pollution prevention.</i>
<b>ISMA</b>	International Ship Managers' Association
<b>ISMSS</b>	Ice Sheet Mass Balance and Sea Level
<b>ISO</b>	independent system operator International Organisation for Standardisation (est 1946) <i>Members from 157 countries, 190 Tech Ctees, 15,000 international standards published. Based Geneva.</i>
<b>isochrone</b>	Contour of equal travelling time from a point (for routeing software)
<b>ISOL</b>	isolated (met)
<b>Isostatic</b>	In hydrostatic equilibrium from equality of pressure
<b>ISOTOPE</b>	Improved Structure & Organisation for Trans Ops of Pax in Europe
<b>ISP</b>	internet service provider
<b>ISPRS</b>	International Society of Photogrammetry and Remote Sensing
<b>ISPS</b>	International Ship and Port Security Code
<b>ISRO</b>	Indian Space Research Organisation
<b>ISS</b>	integrated sensor suite
<b>ISSA</b>	International Ship Suppliers' Association
<b>ISSN</b>	international standard serial number
<b>IST</b>	Information Society Technologies (EC)
<b>ISTB</b>	International Satellite Test Bed (EU initiative)
<b>ISU</b>	International Salvage Union
<b>ISWG</b>	Intersessional Working Group (IMO)

<b>IT</b>	information technology
<b>ITAS</b>	Integrated Topographic Analysis System (to predict GPS Jamming)
<b>ITC</b>	International Trade Commission (US)
<b>iTEC-eFDP</b>	<i>interoperability Through European Collaboration - european Flight Data Processing</i>
<b>ITF</b>	International Transport (Workers) Federation
<b>ITI</b>	imminent terrain impact (TAWS alert)
<b>ITIS</b>	Integrated Transport Information Services (travel inf for logistics)
<b>ITM</b>	Institute of Transport Management
<b>ITN</b>	Integrated Transport Network (data layer of OSMM) <i>Comprises Roads Network and Road Routing Information (RRI).</i>
<b>ITOFAR</b>	Interrogated Time Offset Frequency Agile Racon
<b>ITRF</b>	IERS Terrestrial Reference Frame (currently ITRF2000)
<b>ITS</b>	Intelligent Transport Society intelligent transport(ation) system <i>The application of IT and comms to all surface transport modes.</i> intermediate level test set
<b>ITSUK</b>	Intelligent Transport Society for the UK (>130 members)
<b>ITU</b>	Intermodal Transport Unit (EU container for any form of transport) International Telecommunication Union <i>ITU-R is Radiocommunication Sector (ex-CCIR) and ITU-T is Telephony and Telegraphy (ex-CCITT). ITU is a UN Agency.</i>
<b>ITWS</b>	Integrated Terminal Weather System (gives ATC 20-min wx)(US)
<b>ITZ</b>	Inshore Traffic Zone
<b>IUGG</b>	International Union of Geodesy and Geophysics
<b>IUGS</b>	International Union of Geological Sciences
<b>IULS</b>	Integrity Uplink Station (Galileo)
<b>IUSM</b>	International Union for Surveys and Mapping
<b>IVHS</b>	intelligent vehicle highway system
<b>IVI</b>	Intelligent Vehicle Initiative (US)
<b>IVIS</b>	in-vehicle information system
<b>IVR</b>	interactive voice response (phones/computers)
<b>IVS</b>	in-vehicle system
<b>IVSI</b>	instantaneous vertical speed indicator (air)
<b>IVU</b>	in-vehicle unit
<b>IWAAS</b>	Initial WAAS <i>Capable of supporting navigation and CAT I precision approach but lacking internal redundancy and guaranteed availability.</i>
<b>IWAN</b>	internal wide area network
<b>IWP</b>	intermediate waypoint
<b>IWV</b>	integrated water vapour
<b>J-band</b>	NATO radar band 10-20 GHz = 3-1.5 cm

<b>J/S</b>	jamming-to-signal ratio
<b>JAA</b>	Joint Aviation Authorities (40 members in 2006)
<b>JANE</b>	Joint Air Navigation Experiments (EU)
<b>JANSC</b>	Joint Air Navigation Services Council (MOD/NATS)
<b>JAR</b>	Joint Aviation Requirement (of the JAA)
<b>JAR-OPS</b>	Joint Aviation Requirement Operations Manuals
<b>JCAB</b>	Japanese Civil Aviation Bureau
<b>JCG</b>	Joint Coordinating Group <i>Comprising chairmen &amp; chief executives of the GLAs.</i>
<b>JD</b>	Julian Day (count of days from midday on 1 January 4713 BC)
<b>JDRMA</b>	Japan Digital Road Map Association
<b>JERICHO</b>	Impact of a Changing Wave Climate on our Coasts (BNSC project)
<b>JGPSC</b>	Japan GPS Council
<b>JIBS</b>	Joint Irish Bathymetric Survey (Project under INTERREG IIIA)
<b>JIN</b>	Japan Institute of Navigation
<b>JMC</b>	Joint Maritime Commission (of ILO)
<b>JMSA</b>	Japan Maritime Safety Agency
<b>JNRP</b>	Joint Navigation Requirements Policy (GLAs)
<b>JOI</b>	Joint Operating Instruction
<b>JOS</b>	Joint Operation Schedule (EGNOS)
<b>JPALS</b>	Joint Precision Approach and Landing System <i>Rapidly-deployable military system. Was extended (2003) to use LAAS to get to CAT III. Joint US Forces.</i>
<b>JPEG</b>	Joint Photographic Expert Group <i>Standard for digital image compression.</i>
<b>JPL</b>	Joint Propulsion Laboratory (Pasadena CA, USA)
<b>JPO</b>	Joint Program Office (US)
<b>JRANS</b>	Japan Regional Air Navigation System (planned for much of S Asia)
<b>JRC</b>	Joint Research Centre (EC)
<b>JRCC</b>	joint rescue co-ordination centre
<b>JRSC</b>	joint rescue secondary centre
<b>JSC</b>	Joint Spectrum Centre (US)
<b>JSR</b>	jamming-to-signal ratio <b>Java Specification Request</b> <i>An optional package that enables developers to write mobile location-based applications for resource-limited devices.</i>
<b>JTIDS</b>	Joint Tactical Information Distribution System (US/NATO DL) <i>Also known as NATO Link 16.</i>
<b>JTSO</b>	Joint Technical Standard Order (JAA)
<b>JU</b>	Joint Undertaking (Galileo management)

<b>JUCG</b>	Joint User Consultative Group on Aids to Navigation <i>Set up in 1988 by the then Dept of Transport. Now run by the GLAs with secretariat at TH.</i>
<b>JWG</b>	Joint Working Group (ICAO and IMO)
<b>k</b>	kilo (SI unit multiplier of $10^3$ )
<b>K-band</b>	NATO radar band 20-40 GHz = 1.5-0.75 cm Old radar band 18-27 GHz (ITU assigned 24.05-24.25 GHz) ~ 1.5 cm
<b>K<sub>a</sub>-band</b>	Old radar band 27-40 GHz (ITU assigned 33.4-36.0 GHz) ~ 1 cm
<b>Kalman Filtering</b>	<i>Mathematical method of combining data to give optimal position (velocity etc) solutions whilst on the move.</i>
<b>KAREN</b>	European ITS framework architecture
<b>kbit</b>	kilobit <i>1,024 bits or 128 8-bit bytes.</i>
<b>kbps</b>	kilobits per second
<b>KF</b>	Kalman filter
<b>kg</b>	kilogram (1,000 grams)
<b>kHz</b>	kilohertz (1,000 cycles per second)
<b>KIAS</b>	knots indicated airspeed
<b>KIN</b>	Korean Institute of Navigation
<b>KinPos</b>	GPS/INS integration software package (Nottingham University, UK)
<b>Klobuchar</b>	model to calculate slant ionospheric delay (eg GPS)
<b>KLT</b>	Karthunen-Loève-Transformation
<b>km</b>	kilometre (1,000 metres)
<b>KMF</b>	key management facility
<b>kn</b>	knot (unit of velocity and speed) <i>1 kn = 1 NM/h = 0.514444 m/s.</i>
<b>KNAG</b>	Royal Dutch Geographical Society
<b>KPI</b>	key performance indicator
<b>KR</b>	Korean Register of Shipping (classification society)
<b>kt</b>	knot
<b>KTA</b>	key technical advisor
<b>KTN</b>	Knowledge Transfer Network (eg Location and Timing)
<b>KTP</b>	Knowledge Transfer Partnership <i>Scheme to bring in tech expert to help devel product or business.</i>
<b>K<sub>v</sub>-band</b>	Old radar band 12-18 GHz ~ 2 cm <i>(ITU assigned 13.4-14.0 &amp; 15.7-17.7 GHz)</i>
<b>kVA</b>	kilo volt-amps
<b>kW</b>	kilowatt (1,000 watts = 1.341 horsepower)
<b>L-band</b>	NATO radar band 40-60 GHz = 7.5-5 mm Old radar band 1-2 GHz (ITU assigned 1,215-1,400 MHz) = 30-15 cm
<b>L/L</b>	latitude and longitude



<b>L1, L2, L5</b>	GPS carrier frequencies (in the old L-band) <i>Frequencies (MHz) are 1,575.42 (L1), 1,227.60 (L2) &amp; 1,176.45 (L5).</i>
<b>L2C</b>	second civil signal (GPS - carries CNAV)
<b>L2CCO</b>	Level 2 Certificate in Coaching Orienteering
<b>LA</b>	Local Authority
<b>LAADR</b>	Low-Altitude Arrival/Departure Route
<b>LAAS</b>	Local Area Augmentation System (GPS etc) <i>Operational date in USA 2004.</i>
<b>LAC</b>	Lights Advisory Committee (GLAs) localisation area code (GSM)
<b>LAD</b>	linear averaging digital (Loran technique from Locus Inc)
<b>LADGNSS</b>	Local Area Differential GNSS
<b>LADGPS</b>	Local Area Differential GPS
<b>LAHSO</b>	land and hold short operation (to expand runway capacity)
<b>LAL</b>	lateral alert limit/level (eg for WAAS precision approach etc) LBS Application Level
<b>LAMBDA</b>	least-squares ambiguity decorrelation adjustment (algorithm)
<b>LAN</b>	local apparent noon local area network longitude of the ascending node <i>The point where an orbit intersects the equator when crossing from south to north.</i>
<b>LANBY</b>	Large Automatic Navigation Buoy
<b>LARS</b>	Lower Airspace Radar Service
<b>LAS</b>	local area system lower airspace service
<b>laser</b>	light amplification by stimulated emission of radiation
<b>LASOIS</b>	Lunar Astronaut Spatial Orientation and Information System
<b>LAST</b>	Light Aviation SSR Transponder (Mode S proposed for UK)
<b>Lat</b>	(LAT) ( $\varphi$ ) latitude (angular distance from equator, labelled N or S) <i>May be geographic, geodetic, geocentric or astronomical.</i>
<b>LAT</b>	local apparent time lowest astronomical tide
<b>LATCC</b>	London Area and Terminal Control Centre (ATC)
<b>LATS</b>	London Area Traffic Survey (UK DTLR)
<b>LAVIA</b>	Limiteur s'Adaptant à la Vitesse Autorisée (French EVSC)
<b>LB</b>	lighted buoy
<b>LBA</b>	Luftfahrt Bundesamt (German CAA)
<b>LBMON</b>	L-Band Monitor (computer program)
<b>LBS</b>	lifeboat station location-based service(s)
<b>LBSP</b>	location-based services provider

LC	liquid crystal
LCA	liquid crystal transmissive array
LCCC	leadless ceramic chip carrier
LCD	liquid crystal display
LCLA	Local Cave Leader Award
LCN	low-cost navigator
LCoS	liquid crystal on silicon
LDA	landing distance available
LDGPS	Local Differential GPS (or LADGPS)
LDT	light displacement tonnage
LDTL	low-density traffic line (railway)
LE	local element
LEA	location enabled technology
LED	light-emitting diode
leeway angle	<i>Angular difference between course through water and course to steer.</i>
Leg	intended ground track between 2 waypoints
LEO	low earth orbit <i>Satellite orbit of up to 3,000 km.</i>
LEOLUT	low earth orbit local user terminal
LEOSTAR	low earth orbit stellites of COSPAS-SARSAT
LEP	linear error probable <i>Half of the interval containing half of the results of the trials in a series of one-dimensional measurements.</i>
LES	land earth station (same as CES operationally)
LETTEL	lateral emitting thin film electroluminescent device (for displays)
LEUT	local element user terminal (GNSS)
LF	light float low frequency (30-300 kHz)
LFA	low/local flying area
LFC	Lighthouse Finance Committee (GLAs) low flying chart
LFS	low flying system
LFSR	linear feedback shift register
LFV	Luftfartsverket (Swedish CAA)
LGF	LAAS ground facility
LH	lighthouse
LHA	local hour angle
LHCP	left hand circularly polarised
LHS	left hand seat (cockpit)
LIBERAIL	Liberalised and Interoperable Railways (EU)
LICTA	ATCOs' union in Italy
LIDAR	Laser Induced Direction and Range (airborne scanning sys for DEMs)

LIFSZ	ATCOs' union in Hungary
Light aircraft	aircraft with a max takeoff weight of 12,500 lbs (5,700 kg) or less
LIM	local integrity monitor
LINCS	Low-cost Identification, Navigation, Communication, Surveillance
LINK2000+	Critical step in data-link tech & applications (precursor to SESAR)
LINS	laser inertial navigation system
LIP	limited installation program(me)
LISA	limited instruction set architecture
LISP	Local Integrated Service Package (Galileo)
LITAS	low-intensity two-colour approach system
LJAO	London Joint Area Organisation (ATC)
LKLY	likely (met)
LLA	local lighthouse authority
LLI	loss of lock index
LLN	laser linescan navigation
lm	lumen (luminus flux in cd sr)
Lm	Mean latitude (half the sum of the latitudes of 2 places)
LMDS	local-multipoint distribution service
LMES	land mobile earth station
LMSE	least mean square error
LMT	local mean time <i>The arc of the celestial equator between the lower branch of the local celestial meridian and the hour circle of the true sun.</i>
LMU	location measurement unit location monitoring unit (to synch 'time' in a cellular system for nav)
LNA	low noise amplifier
LNAV	lateral navigation <i>An initial WAAS service to give non-precision approach down to 400 -500ft. No vertical guidance. Requires 556 m HAL protection.</i>
LNAV/VNAV	lateral and vertical navigation <i>An initial WAAS service to give precision approach down to 350ft and 1 n mile. May also be referred to as non-precision approach with vertical guidance. Requires 40 m HAL and 12 m VAL protection.</i>
LNB	low-noise block (antenna component)
LNM	Local Notice to Mariners
LNV	land navigation vehicle (for testing airborne systems - USAF)
LO	local oscillator
LOA	length overall letter of agreement
LOC	localiser (azimuth guidance portion of ILS)
LOCOLOC	LOW-COST LOCcalisation (for train integrity (ESA))

<b>LOCOPROL</b>	(or just LOCO) <i>LOW-COst satellite-based train location system for signalling and train PROtection for Low density traffic railway lines. EC FP 5, 2001-04.</i>
<b>Locus</b>	Pinpoint project on location context tools for 3G services <i>City University &amp; The Geoinformation Group.</i>
<b>LOGIC</b>	Loran GNSS interoperability channel
<b>LOIS</b>	Land Ocean Interaction Study
<b>Lon</b>	(LON) ( $\lambda$ ) longitude <i>Angle at the pole between prime meridian and meridian of a point, labelled E or W. May be geographic, geodetic, geocentric or astronomical.</i>
<b>LOP</b>	line of position (also PL)
<b>LOR</b>	legal and organisational review (EC) Long-term Operations & Replenishment (phase of Galileo fm 2008)
<b>LORADD</b>	eLoran receiver (Reelektronika)
<b>LORAN</b>	LORAN-C is a terrestrial pulsed hyperbolic system in band 90-110kHz. LORAN-C is a terrestrial pulsed hyperbolic system in band 90-110kHz.
<b>LORAPP</b>	Loran Accuracy Panel (US FAA)
<b>LOREG</b>	Loran/Eurofix/EGNOS (Norwegian test and evaluation plan)
<b>LORIPP</b>	Loran Integrity Panel (US FAA)
<b>LORSTA</b>	Loran station
<b>LOS</b>	line-of-sight
<b>Loxodrome</b>	rhumb line
<b>LPM</b>	Loran Propagation Model (software package)
<b>LPST</b>	Low Power SSR Transponder
<b>LPV</b>	Lateral Precision with Vertical Guidance (landing system) <i>Uses GPS/WAAS. Requires 40 m HAL and 50 m VAL protection.</i>
<b>LR</b>	long range
<b>LRC</b>	Long Range Certificate (for GMDSS MF/HF equipment)
<b>LRIP</b>	low rate initial production
<b>LRIT</b>	long range identification and tracking (of ships)
<b>LRK</b>	long-range kinematic (of GPS)
<b>LRM</b>	line-replaceable module
<b>LRNS</b>	long range navigation system
<b>LROPS</b>	long-range operations
<b>LRP</b>	LORAN-C Recapitalization Project (US - \$120 million)
<b>LRU</b>	line-replaceable unit
<b>LRUC</b>	Lorry Road User Charge (UK programme of HM Customs & Excise)
<b>LS</b>	leap seconds (=TAI - UTC; was +32s Nov 00) least square
<b>LSB</b>	least significant bit
<b>LSF</b>	leap seconds future

<b>LSI</b>	large scale integration (of chips)
<b>LSR</b>	least squares residual
<b>LSTID</b>	large scale travelling ionospheric disturbance
<b>LSU</b>	Loran Support Unit (USCG)
<b>LSVA</b>	Swiss Heavy Vehicle Free Area
<b>LT</b>	local time
<b>LTF</b>	Legal Task Force (EUROCONTROL)
<b>LTMA</b>	London Terminal Manoeuvring Area (ATC)
<b>LTP</b>	LAAS Test Prototype (US) local transport plan
<b>LUT</b>	local user terminal (COSPAS-SARSAT)
<b>LV</b>	light vessel
<b>LVTO</b>	low visibility take-off
<b>LW</b>	low water
<b>lx</b>	lux (illuminance in $\text{lm}/\text{m}^2$ )
<b><math>\mu</math></b>	micro (SI unit multiplier of $10^{-6}$ )
<b><math>\mu</math>-FORS</b>	micro-fibre-optic rate sensor
<b><math>\mu</math>-XANES</b>	microscopic X-ray absorption near-edge structure
<b><math>\mu</math>-XRF</b>	microscopic X-ray fluorescence
<b><math>\mu\text{T}</math></b>	micro Tesla (earth's magnetic field is earth is $\sim 50$ )
<b><math>\mu</math></b>	Earth's gravitational constant (typically $3.99 \times 10^{14} \text{m}^3/\text{s}^2$ )
<b><math>\mu\text{V}/\text{m}</math></b>	microvolts per metre
<b>m</b>	metre milli (SI unit multiplier of $10^{-3}$ )
<b>M-ADS</b>	Modified Automatic Dependent Surveillance <i>Mandatory for helicopters in Norwegian Sector of North Sea from Apr 99.</i>
<b>M-band</b>	NATO radar band $> 60 \text{ GHz} = < 5 \text{ mm}$
<b>M-Code</b>	Military Code for GPS (military signal - spec produced in 2000) <i>Due to be used with last 12 Block IIR satellites and Block IIFs on L1 and L2</i>
<b>M-Notice</b>	Merchant Shipping Notice (UK)
<b>M-Spot</b>	(Mspot/M Spot) Mil GPS technique of focussing sig to give higher
<b>m/s</b>	metres per second
<b>M</b>	Mach magnetic mega (SI unit multiplier of $10^6$ ) nautical mile on charts under IHO Spec of 1982 <i>Approx 1,852 m or 6,080 ft.</i>
<b>M&amp;C</b>	monitor and control station
<b>M&amp;S</b>	models and simulation
<b>M&amp;T</b>	measurement & testing

<b>MA</b>	map aiding
<b>MAC</b>	medium access control
	miniature atomic clock
<b>Mach No</b>	(M) Ratio of TAS to local speed of sound
<b>MAFF</b>	Ministry of Agriculture, Fisheries and Food (UK - now DEFRA)
<b>mag</b>	magnetic
	magnitude (of star)
<b>MAGES</b>	Mature Applications of Galileo for Emergency Scenarios (GSA)
<b>MAGR</b>	Miniaturised Airborne GPS Receiver (US - Rockwell)
<b>MAGVAR</b>	magnetic variation
<b>MAIA</b>	Measuring Atlantic Inflow into the Arctic (EU MAST V project)
<b>MAIB</b>	Marine Accident Investigation Branch (UK)
<b>MaLoC</b>	Management Location Content (position- & time-stamped for LBS)
<b>MAP</b>	missed approach point
<b>MARAD</b>	Maritime Administration (US)
<b>MARE</b>	(MERR) maximum allowable range error
<b>MAREP</b>	Mariner Reporting System
<b>MARIS</b>	Maritime Information Society (EC DG III - formed May 97) <i>www.maris.int</i>
<b>MARPOL</b>	Int Convention for the Prevention of Pollution from Ships (1973/78)
<b>MARSOURCE</b>	A fisheries & marine environment info network (MARIS)
<b>MARTRANS</b>	Info network on movement of cargo vessels (MARIS)
<b>MARUSE</b>	GJU maritime project under FP6 (Oct 05 - Oct 70) <i>To promote the use of Galileo and EGNOS.</i>
<b>maser</b>	microwave amplification by stimulated emission of radiation
<b>MASPS</b>	Minimum Aircraft Systems Performance Specification <i>ICAO standards required of aircraft wishing to use areas of reduced separation standards, eg MASPS (altimetry) required for RVSM.</i>
<b>MAST</b>	Marine Science and Technology (EC R&D project - MAST III)
<b>MasterMap</b>	OS definitive map database of UK
<b>MAT</b>	monitoring and analysis tool
<b>MATCA</b>	ATCOs' union in Malta
<b>MATHP</b>	missed approach holding waypoint
<b>MATO</b>	military air traffic operations
<b>MATRIX</b>	Proprietary form of E-OTD that can self-determine precise time
<b>MATS</b>	Manual of Air Traffic Services (UK - CAP 493)
<b>MATWP</b>	missed approach turning waypoint
<b>MATZ</b>	Military Air Traffic Zone <i>Usually 5 n miles radius up to 3,000 ft with stubs of 2,000-3,000 ft to 10 n miles aligned with main runway.</i>
<b>MAU</b>	modular avionics unit
<b>MAUW</b>	maximum all-up weight

<b>MAV</b>	micro aerial vehicle
<b>MAWP</b>	missed approach waypoint
<b>Mayday</b>	"m'aidez" - help me. International radio distress call
<b>MB</b>	magnetic bearing (angular distance from MN to the object)
<b>Mb</b>	megabyte (= 1,048,576 bytes)
<b>mB</b>	millibar <i>Superseded by the hectopascal (hPa). 1mB = 100 pascals = 1 hPa.</i>
<b>MBB</b>	Maritime Black Box (EU R&D project)
<b>MBOC</b>	multiplexed binary offset carrier (used by Galileo)
<b>Mbps</b>	Million bits per second
<b>MC</b>	magnetic course <i>Intended direction of movement (of the ship), defined by the angle between the magnetic meridian through its position and the fore-and-aft line (of the ship), expressed in angular units from magnetic north (000°).</i>
	main computer
	master clock
<b>MC-UWB</b>	multi-carrier UWB
<b>MCA</b>	Marine and Coastguard Agency <i>An executive agency of the UK DfT, based in Southampton.</i>
<b>MCB</b>	multi-communications box
<b>MCC</b>	Master Control Centre (EGNOS - Toulouse) Mission Control Centre (COSPAS-SARSAT)
	mobile country code (phone network)
	multi-crew cooperation
<b>MCDU</b>	multifunction control and display unit
<b>MCF</b>	Mission Control Facility (Galileo)
<b>MCM</b>	multi-chip module (several chips in one package)
<b>MCMT</b>	mean corrective maintenance time
<b>MCPA</b>	Marine and Coastal Protected Area
<b>Mcps</b>	megachips per second
<b>MCS</b>	Master Control Station (GPS - Colorado Springs) (MSAS) Mission Control System (Galileo)
<b>MCT</b>	mercury cadmium telluride (IR sensor material)
<b>MCTA</b>	military control area (ATC)
<b>MCTZ</b>	military control zone (ATC)
<b>MCW</b>	modulated continuous-wave
<b>MCWG</b>	Maps and Charts Working Group (CAA)
<b>MDA</b>	minimum decision altitude (of landing aircraft) Mobile Data Association (UK)

<b>MDB</b>	marginally detectable bias <i>The minimum size of the gross error in an observation that may be detected with given probability. Gross error detection may apply to wrongly rejecting an observation without a gross error (type 1) or wrongly accepting an observation with a gross error (type 2).</i>
<b>MDCE</b>	Maritime Data Centre of Europe (independent, based in Copenhagen)
<b>MDE</b>	marginally detectable error <i>The maximum position offset caused by a MDB in a LOP or observation.</i>
	minimum detectable error
<b>MDES</b>	Measurement Data recording and data Evaluation System (DFS) <i>German system for permanent GNSS data recording, monitoring and analysis.</i>
<b>MDGPS</b>	Maritime DGPS (USCG, part of NDGPS)
<b>MDH</b>	minimum descent height (of landing aircraft)
<b>MDIS</b>	Midlands Driver Information System
<b>MDM</b>	modem data manager
<b>MDO</b>	marine diesel oil
<b>MDR</b>	mental deduced reckoning
<b>MDT</b>	mean down time
	mobile data terminal (in vehicle)
<b>MEA</b>	minimum enroute altitude (US)
<b>Meaconing</b>	Receiving and re-broadcasting nav signals to confuse nav receivers
<b>MECP</b>	Mobile Electronics Certified Professional (UK)
<b>MED</b>	Marine Equipment Directive
<b>MEDA</b>	military emergency diversion aerodrome
<b>MEDEVAC</b>	medical evacuation
<b>MEDLL</b>	multipath estimating delay lock loop (eg in GPS receiver)
<b>MEGRIN</b>	Multi-purpose Ground Related Information Network (mapping)
<b>MEHRA</b>	marine environmental high risk area
<b>MEL</b>	minimum equipment list (eg to operate an aircraft safely) <i>May be associated with DDG/CDL.</i>
<b>MELTT</b>	French Ministry of Transport
<b>MEMS</b>	micro-electromechanical system (eg micro IMU from ~ 1995)
<b>MENTORE</b>	<i>iMplemENTation of GNSS tracking &amp; tracing Technologies FOR Eu regulated domains</i>
<b>MEO</b>	medium earth orbit <i>Satellite orbits of 3,000-30,000 km.</i>
<b>MEOLUT</b>	medium earth orbit local user terminal (eg Galileo)
<b>MEPC</b>	Marine Environment Protection Committee (IMO)
<b>MERC</b>	maritime emergency reception centre <i>For dealing with ships in difficulty rather than distress.</i>



<b>Merged Consortium</b>	For Galileo Concession (bid in Oct 05) <i>AENA, Alcatel, EADS Space, Hispasat, Inmarsat, Finmeccanica, Thales.</i>
<b>Meridian</b>	Great circle through the geographical poles of the earth
<b>Meridional difference</b>	( $\Delta\Phi$ ) Difference of the meridional parts of any 2 given parallels
<b>Merparts</b>	( $\Phi$ ) Meridional parts <i>Length of the arc of a meridian between the equator and a given parallel on a Mercator chart, expressed in units of 1' of longitude on the equator.</i>
<b>MERPR</b>	maximum allowable error in pseudorange
<b>MERR</b>	(MARE) maximum allowable range error
<b>MERSAR</b>	MERchant ship Search And Rescue (IMO manual)
<b>MERV</b>	maximum tolerable vertical position error
<b>MES</b>	mobile earth station <i>For maritime use known as SES. For land use known as LES or LMES.</i>
<b>MESA</b>	maximum entropy spectral analysis Mobility for Emergency & Safety <i>A single platform for a range of applications related to TETRA bu on 3.8-4.9 GHz.</i>
<b>MESF</b>	Mobile Electronics & Security Federation (UK)
<b>MESFET</b>	metal semiconductor field effect transistor
<b>Mesosphere</b>	Part of atmosphere from ~ 50-85 km
<b>METAR</b>	meteorological aerodrome report
<b>METAREA</b>	sea area for GMDSS meteorological information
<b>MetFAX</b>	UK Met Office faxed-based dial-up weather service
<b>Metop</b>	Satellites (3) forming EPS
<b>MF</b>	medium frequency (300-3,000 kHz) (hectometric waves)
<b>MFA</b>	major floating aid (light vessel, LANBY, light float)
<b>MFC</b>	multi-frequency channel
<b>MFD</b>	multi-function display
<b>MGF</b>	Message Generation Facility (Galileo)
<b>MGN</b>	Marine Guidance Notice (MCA)
<b>MGO</b>	marine gas oil
<b>MH</b>	magnetic heading <i>Actual direction in which the longitudinal axis (of the ship) is pointed, defined by the angle between the magnetic meridian through its position and the fore-and-aft line (of the ship), expressed in angular units from magnetic north (000°).</i>
<b>MHRS</b>	magnetic heading reference system
<b>MHW</b>	mean high water
<b>MHWN</b>	mean high water neaps
<b>MHWS</b>	mean high water springs

<b>MHz</b>	megahertz (1,000,000 cycles per second)
<b>MI</b>	misleading information shallow (met)
<b>MIC</b>	mounain instructor certificate
<b>MICA</b>	multiyear interactive computer almanac
<b>microwaves</b>	radio waves > 1 GHz
<b>MID</b>	maritime identification digits
<b>MIDAR</b>	Marine Identity Data Automatic Response (similar to aviation SSR)
<b>MIDAS</b>	Motorway Incident Detection and Signalling System Multi-Instrument Data Analysis System (math model for ionos delay)
<b>MIDS</b>	Multifunction Information Distribution System (data link)
<b>MIERS</b>	Mitigation of Ionospheric Effects on Radio Systems (COST project)
<b>MIL-STD</b>	Military Standard
<b>MIME</b>	Multipurpose Internet Mail Extension
<b>MIN</b>	Marine Information Note (UK)
<b>min</b>	minimum minute
<b>MIO</b>	marine information object (time-variable object in ECDIS)
<b>MIOC</b>	multifunction integrated optic chip (used in fibre-optic gyros)
<b>MIP</b>	Multiannual Indicative Programme (EC DG TREN)
<b>MIPS</b>	million instructions per second
<b>MIRA</b>	Motor Industry Research Association
<b>MIRG</b>	Maritime Incident Response Group (UK)
<b>MIS</b>	management information system Marine Information System (ECDIS may contribute to it)
<b>MISNA</b>	Marine Information Service of North America
<b>MISTER</b>	Minimum Interoperability Spec for Tolling on European Roads
<b>MIT</b>	Massachusetts Institute of Technology (US)
<b>MITRA</b>	<i>Monitoring and Intervention for the TRAnsportation of Dangerous Goods (EC FP6 - 2004-06).</i>
<b>MJD</b>	Modified Julian Day (started midnight 17 November 1858) <i>Equals JD - 2,400,000.5.</i>
<b>MKD</b>	minimum keyboard display (eg AIS)
<b>mkr</b>	marker/marker beacon (on 75 MHz for ILS)
<b>MLA</b>	Mountain Leader Award multipath-limiting antenna
<b>MLAT</b>	magnetic latitude
<b>MLC</b>	Mountain Leader Certificate
<b>MLE</b>	maximum likelihood estimator
<b>MLLW</b>	mean lower low water
<b>MLP</b>	multi-layer perceptron (neural network)

<b>MLS</b>	Microwave Landing System
<b>MLT</b>	magnetic local time
<b>MLU</b>	mid-life update
<b>MLV</b>	medium launch vehicle
<b>MLWN</b>	mean low water neaps
<b>MLWS</b>	mean low water springs
<b>MM</b>	map-matching MasterMap (Ordnance Survey trademark)
<b>MmaxCT</b>	maximum corrective maintenance time
<b>MMC</b>	multi-media card (typical 64 Mb)
<b>MMD</b>	mean mission duration
<b>MMG</b>	micro-mechanical gyro (a form of MEMS)
<b>MMI</b>	man-machine interface (nowadays replaced by 'HMI')
<b>MMLE</b>	method of maximum likelihood estimation (adaptive filter technique)
<b>MMLS</b>	Mobile Microwave Landing System
<b>MMR</b>	multi-mode receiver
<b>MMS</b>	Multimedia messaging service (mobile phones)
<b>MMSI</b>	Maritime Mobile Service Identity (Code) (GMDSS DSC)
<b>MMW</b>	millimeter-wave (eg radar) multipath mitigation window
<b>MN</b>	magnetic north <i>Northerly direction of the horizontal component of the earth's magnetic field.</i>
<b>MNC</b>	mobile network code (phone network)
<b>MNE</b>	Marine Navigation Equipment (Sub-Group of UK SON Ctee)
<b>MNM</b>	mathematical navigation monitor <i>Provides position estimate with associated errors by data fusion of dissimilar sensors.</i>
<b>MNP</b>	Master Navigation Plan (US)
<b>MOA</b>	memorandum of agreement
<b>MOB</b>	man overboard
<b>MoBIC</b>	Mobility of Blind and Elderly People Interacting with Computers
<b>MoC</b>	memorandum of cooperation
<b>MOCA</b>	minimum obstruction clearance altitude (US)
<b>MOD</b>	Ministry of Defence
<b>Mode</b>	SSR mode of operation <i>Mode A - normal ATC codes, Mode C - encoded flight levels, Mode S - selective interrogation and downlinking of aircraft parameters (DAPs).</i>
<b>Mode S</b>	Mode Select - SSR using selective addressing <i>Selection based on ICAO 24-bit unique address for each aircraft. Also allows downlinking of flightplan callsign and altitude in 25 ft increments. Includes ELS and EHS. Mandatory in Europe for IFR flights from 31 Mar 05.</i>

<b>modem</b>	modulator-demodulator
<b>MOEMS</b>	micro-opto-electromechanical system (eg micro IMU)
<b>mogas</b>	car fuel
<b>MOIE</b>	Mission-Oriented Investigation and Experimentation (FAA projects)
<b>MOMENTUM</b>	Mobility Management for the Urban Environment (EU)
<b>MOMO</b>	Navigation tool for blind pedestrians using mobile phone (ESA proj)
<b>MON</b>	Minimum Operational Network (FAA - of VORs by 2014)
<b>MoODS</b>	MoBIC Outdoor System
<b>MOPS</b>	Minimum Operational Performance Standards <i>A set of standards defining minimum performance, functions and features for RNAV and, optionally, VNAV equipment.</i>
<b>MOR</b>	Mandatory Occurrence Reporting scheme (CAA)
<b>MORANE</b>	Mobile Radio for Railway Networks in Europe (EU RTD project)
<b>MOSAIC</b>	Mobility Strategy Applications in the Community (EU)
<b>MOST</b>	Media Orientated System Transport (protocol for mobile internet)
<b>MOU</b>	memorandum of understanding
<b>MOVA</b>	Microprocessor Optimised Vehicle Actuated (traffic signal prog)
<b>MP</b>	meridian passage
<b>MPA</b>	maritime patrol aircraft
<b>MPCU</b>	Marine Pollution Control Unit (UK)
<b>MPEG</b>	Motion Picture Experts Group <i>Standard for digital audio compression (eg MP3).</i>
<b>MPF</b>	Mission Planning Facility (Galileo)
<b>MPFA</b>	multi-position fusion algorithm
<b>MPNTP</b>	Master Positioning, Navigation and Timing Plan (US)
<b>MPS</b>	Mobile Positioning Systems (=VPS)(generic term used by DTLR)
<b>MPT</b>	European radio regulation prefix to be replaced by ETS
<b>MQM</b>	measurement quality monitoring
<b>MR</b>	medium risk (marine) mixed reality <i>Technologies which use both hardware tracking technologies (i.e. GPS, digital compass) and software (AR, VR, mobile interfaces).</i>
<b>MRAC</b>	Marine Radio Advisory Committee (MCA)
<b>MRCC</b>	Maritime Rescue Co-ordination Centre multiple receiver consistency check
<b>MRD</b>	mission requirement document
<b>MRIN</b>	Member of the Royal Institute of Navigation
<b>MRIT</b>	Maritime Radar Interrogator-Transponder (system)
<b>MRLG</b>	monolithic RLG (3 orthogonal RLGs in one block, eg Kearfott T-10)
<b>MRO</b>	maintenance, repair and overhaul
<b>MRS</b>	Monitor and Ranging Station (MSAS) multi-constellation regional system

<b>MRSA</b>	mandatory radar service area (military ATC)
<b>MRSC</b>	Maritime Rescue Secondary (Sub) Centre
<b>MRSE</b>	mean radial spherical error
<b>MRT</b>	mountain rescue team
<b>MRTD</b>	machine-readable travel document
<b>MRVA</b>	minimum radar vectoring altitude
<b>ms</b>	millisecond (one-thousandth of a second)
<b>MS</b>	Monitor Station (eg GPS)
<b>MSA</b>	Marine Safety Agency <i>Was part of DETR, replaced in Apr 98 by MCA.</i>
	minimum safe altitude
	minimum sector altitude
<b>MSAs</b>	Merchant Shipping Acts (in UK empower the GLAs)
<b>MSAS</b>	Multi-transport Satellite-based Augmentation System <i>Japanese WAAS.</i>
<b>MSAWS</b>	minimum safe altitude warning system
<b>MSB</b>	most significant bit multi-sensor box
<b>MSC</b>	Maritime Safety Committee (IMO)
<b>MSD</b>	minimum separation distance
<b>MSDP</b>	multi-sensor data processor
<b>MSF</b>	Callsign of UK 60 kHz time & freq TX used by radio-cont clocks.
<b>MSF</b>	Mission Support Facility (Galileo)
<b>MSG</b>	Meteosat Second Generation (3 met/S&R sats first launched 2002)
<b>MSI</b>	Maritime Safety Information (IMO)
<b>MSK</b>	minimum shift keying
<b>msl</b>	mean sea level
<b>MSN</b>	Merchant Shipping Notice (M-Notice)(UK)
<b>MSS</b>	mean sea surface mobile satellite service
<b>MSSR</b>	monopulse secondary surveillance radar
<b>MSTID</b>	medium scale travelling ionospheric disturbance
<b>MSU</b>	mobile satcom unit
<b>MT</b>	mobile terminal mobile terminated (call or SMS to a mobile device)
<b>MTA</b>	military training area
<b>MTB</b>	Mediterranean Test Bed (part of STENAV for Galileo)
<b>MTBCF</b>	mean time between critical failures
<b>MTBDE</b>	mean time between downing events
<b>MTBF</b>	mean time between failures <i>The average time between 2 successive failures of a system or part of a system.</i>

<b>MTBM</b>	mean time between maintenance
<b>MTCD</b>	Medium-Term Conflict Detection (System) (used in ATC centres)
<b>MTIE</b>	maximum time interval error
<b>MTOM</b>	maximum take-off mass
<b>MTOW</b>	maximum take-off weight
<b>MTRA</b>	military temporary reserved airspace
<b>MTSA</b>	Marine Transportation Security Act (US 2002 - mandates LRIT)
<b>MTSAT</b>	(MT-SAT) Multi-function Transport Satellite <i>Japanese (JCAB) geostationary satellite carrying met, comms, nav overlay and ATC surveillance functions. First launch (of 2) failed.</i>
<b>MTT</b>	minimum time track
<b>MTTR</b>	mean time to repair/restore
<b>multistack</b>	<i>Simultaneous use of 2 or more datalinks, eg VDL Mode 4 and FANS -1/A.</i>
<b>MUSIK</b>	EC 5th FP project for multi-source/applications in positioning
<b>MUSSST</b>	Multimodal Safety Satellite System for Transport <i>EC study to establish principles for safety approval of use of GNSS.</i>
<b>MUX</b>	multiplexer
<b>mV/m</b>	millivolts per metre
<b>MVBA</b>	micro-machined vibrating beam accelerometer (for MEMS IMU)
<b>MVBM</b>	Micromachined Vibrating Beam Multisensor (IMU - Kearfott)
<b>MVUE</b>	manpack/vehicular user equipment minimum variance unbiased estimator
<b>MWO</b>	Met Watch Office (for en-route hazardous wx warnings to aircraft)
<b>MWS</b>	multimedia wireless systems <i>Telecommunications and broadcasting via the same radio network.</i>
<b>MYRTLE</b>	Multi-Year Return Tidal Level Equipment
<b>n</b>	nano (SI unit multiplier of $10^{-9}$ )
<b>N</b>	newton (force in $\text{m kg s}^{-2}$ )
<b>n mile</b>	nautical mile (sometimes NM, M on charts) <i>Approx 1,852 m or 6,080 ft.</i>
<b>N/I</b>	non-instrument (of aircraft approach)
<b>Na</b>	nadir (point on the celestial sphere vertically below the observer)
<b>NACOS</b>	navigation and command system (marine)
<b>NAD</b>	North American Datum
<b>NADC</b>	National Antarctic Data Centre
<b>NADICS</b>	National Driver Information and Control System (Scottish Office)
<b>NAGU</b>	Notice Advisories to GLONASS Users
<b>NANU</b>	Notice Advisory to Navstar Users
<b>NAO</b>	North Atlantic Oscillation

<b>NaPTAN</b>	National Public Transport Access Nodes (UK) <i>Database of bus, coach and tram stops, bus and train stations, taxi ranks and ferry and air terminals.</i>
<b>NARSIA</b>	North American Remote Sensing Industries Association
<b>NAS</b>	National Airspace System (US) Naval Air Station (US) Newly Associated States (into the EU)
<b>NAS IG</b>	National Airspace System Implementation Group (Australia)
<b>NASA</b>	National Aeronautics and Space Administration (US)
<b>NASDA</b>	National Space Development Agency of Japan
<b>NATCA</b>	National Air Traffic Controllers Association (US)
<b>NATCS</b>	National Automatic Toll Collection System (Poland)
<b>National Grid</b>	Metric transverse Mercator grid based on OSGB36 (OS)
<b>NATMAC</b>	National Air Traffic Management Advisory Committee (UK)
<b>NATO</b>	North Atlantic Treaty Organisation (26 states) <i>Belgium, Bulgaria, Canada, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Turkey, UK, US (2007).</i>
<b>NATS</b>	National Air Traffic Services Ltd (UK ATSP)
<b>NATSPG</b>	North Atlantic Systems Planning Group
<b>NAUPLIOS</b>	Navigation and Perilous Goods Input and Output System (Galileo proj)
<b>NAV</b>	IMO Sub-Committee on Safety of Navigation (NAV 49 sits in 2003)
<b>NAV-msg</b>	Navigation Message <i>A 37,500-bit data message included in the GPS signal, sent at 50 bps. Includes satellite ephemeris, clock data, almanac etc.</i>
<b>Navaid</b>	NAVigation AID
<b>NAVAREA</b>	Sea area for GMDSS radio navigation warnings
<b>NAVCEN</b>	Navigation Centre (USCG)
<b>NAVD</b>	North American Vertical Datum
<b>Naviair</b>	Danish air navigation service provider
<b>navigation</b>	<i>The process of planning, recording and controlling the movement of a craft from one place to another (IMO).</i>
<b>NAVSOL</b>	navigation solution
<b>NAVSTAR</b>	NAVigation Satellites with Timing And Ranging (GPS)
<b>NAVTEX</b>	Navigational Information Telex Services
<b>NavWar</b>	NAVigation WARfare (includes military GPS programme)
<b>NAWC</b>	Naval Air Warfare Centre (USN - Patuxent River)
<b>NBDP</b>	narrow band direct printing (eg GMDSS and NAVTEX)
<b>NCAA</b>	Norwegian Civil Aviation Administration
<b>NCF</b>	National Coaching Foundation (trading arm is scUK) Navigation Control Facility (Galileo)
<b>NCI</b>	National Coastwatch Institution (UK)

<b>NCP</b>	National Contact Point (eg for FP6) National Contingency Plan
<b>NCR</b>	negative climb rate (TAWS alert)
<b>NCS</b>	Network Co-ordinating Station (Inmarsat) network communication system
<b>NCW</b>	network centric warfare non-coherent continuous wave (transmission)
<b>ND</b>	navigation display
<b>NDB</b>	nondirectional beacon
<b>NDC</b>	National Document Centre (Greek AGI)
<b>NDGPS</b>	Nationwide DGPS (US)
<b>NDPB</b>	non-departmental public body (UK)
<b>NE</b>	normalised error (for GNSS compares with HDOP = 4)
<b>NEAN</b>	North European ADS-B Network (EU/EUROCONTROL)
<b>NEAP</b>	North-European ADS-B Application Project (EU)
<b>NEC</b>	network-enabled capability
<b>NECSA</b>	Navigational Electronic Chart System Association
<b>NELS</b>	Northwest European LORAN-C System
<b>NEMO</b>	Navigation system analysis suite for European Maritime Operations <i>GLAs/Nottingham Scientific (UK).</i>
<b>NEMS</b>	nano-electromechanical system (technology beyond MEMS)
<b>NEOSIT</b>	navigation/electro-optic sensor integration
<b>Nepheloid layer</b>	<i>Body of water with a high concentration of suspended sediment found near the deep ocean floor, close to the base of a continental slope.</i>
<b>NeQuick</b>	model to calculate slant ionospheric delay (eg Galileo)
<b>NERC</b>	Natural Environment Research Council (UK) New En Route Centre (Swanwick, UK)
<b>NES</b>	Navigation Ground Earth Station (MSAS)
<b>NESTBed</b>	North European Satellite Test Bed (experimental SBAS)
<b>NEXCOM</b>	Next Generation Air/Ground Communications (US) <i>Digital air/ground comms system (generic name of VDL-2 follow-on)</i>
<b>NextGen</b>	next generation ATC system (US FAA - similar to EU's SESAR)
<b>NF</b>	null field
<b>NFC</b>	near field communication
<b>NFM</b>	near field monitor
<b>NG</b>	National Grid (UK)
<b>NGA</b>	National Geospatial-Intelligence Agency (USA)
<b>NGATS</b>	Next Generation Air Transport System (US)
<b>NGDC</b>	National Geophysical Data Centre
<b>NGDF</b>	National Geospatial Data Framework (UK)
<b>NGO</b>	non-governmental organisation



<b>NGPS</b>	Natural GPS (ie unaided)
<b>NGS</b>	National Geodetic Survey (US)
<b>NGVD</b>	National Geodetic Vertical Datum (US)
<b>NHC</b>	Nordic Hydrographic Commission (of IHO)
<b>NHTSA</b>	National Highway Traffic Safety Administration (US)
<b>NI</b>	The Nautical Institute
<b>NIB</b>	non-interference basis
<b>NIKITA</b>	Netherlands TMC service
<b>NIMA</b>	National Imagery and Mapping Agency (US)(ex-DMA)
<b>NIMSA</b>	National Interest Mapping Services Agreement (UK Gov and OS)
<b>NIN</b>	Netherlands Institute of Navigation
<b>NIS</b>	Navigation Information Service/System
<b>NISC</b>	National IFF/SSR Committee
<b>NITS</b>	National ITS (Association)
<b>NK</b>	(NKK) Nippon Kaiji Kyokai (classification society)
<b>NKTF</b>	Norwegian Ass for Cartography, Geodesy, Hydro' & Photogrammetry
<b>NLB</b>	Northern Lighthouse Board (Commissioners of Northern <i>Covers Scotland and the Isle of Man.</i>
<b>NLCCS</b>	New Loran Consolidated Control System (USCG)
<b>NLES</b>	Navigation Land Earth Station (eg EGNOS)
<b>NLR</b>	Netherlands National Aerospace Laboratory
<b>NLS</b>	National Land Survey of Sweden
<b>nm</b>	nanometre ( $10^{-9}$ m)
<b>NM</b>	nautical mile (not universally used but better than 'nm') (also M) <i>Approx 1,852 m or 6,080 ft.</i>
	Notice to Mariners
<b>NMA</b>	Norwegian Mapping Authority
<b>NMCA</b>	National Mapping and Cadastral Agency
<b>NMEA</b>	National Marine Electronics Association (US) <i>Has set standard message formats for transferring GPS data. NMEA -0183 is the usual one.</i>
<b>NMI</b>	National Metrological Institute (NPL is the UK NMI)
<b>NMRI</b>	National Mayday Readiness Initiative (US)
<b>NN</b>	neural network
<b>NNAS</b>	National Navigation Award Scheme (UK)
<b>NNF</b>	Nordisk Navigasjonsforum <i>Nordic Institute of Navigation. Åland Islands, Denmark, Faeroe Islands, Finland, Greenland, Iceland, Norway.</i>
<b>NNR</b>	national nature reserve
<b>NNSS</b>	Navy Navigation Satellite System (Transit)
<b>NOA</b>	Notice of Arrival (US requirement - 96 hrs for ships >300 GT)
<b>NOAA</b>	National Oceanic and Atmospheric Administration (US)

<b>NOC</b>	National Oceanography Centre (Southampton)
<b>NODC</b>	National Oceanographic Data Centre (US)
<b>NoE</b>	Network of Excellence (EU)
<b>nomadic</b>	mobile devices which may be carried from vehicle to vehicle
<b>NOMADS</b>	North Sea Model Advection Dispersion Study (EU MAST project)
<b>NON</b>	unmodulated continuous-wave emission
<b>Non-precision Approach</b>	<i>A standard instrument approach procedure in which only horizontal guidance is given.</i>
<b>NONAV</b>	no navigation (ATC call/squawk in event of loss of nav capability)
<b>NOR</b>	notice of readiness (shipping)
<b>NORDO</b>	no radio (ATC squawk)
<b>NOS</b>	National Ocean Service (US)
<b>NOSC</b>	Naval Ocean Systems Center (US)
<b>NOSIG</b>	no significant change (met)
<b>NOTAM</b>	Notice to Airmen
<b>NP</b>	Naval Publication non-periodic
<b>NPA</b>	non-precision approach <i>A standard instrument approach in which no electronic glidepath/slope is provided.</i>
	Notice of Proposed Amendment (EU JAA)
<b>NPL</b>	National Physical Laboratory (The UK NMI))
<b>NPPL</b>	National Private Pilot's Licence <i>(A) = aircraft, (B) = balloons, (H) = helicopters, A(M) = microlights.</i>
<b>NPR</b>	noise preferential route (ATC)
<b>NPRM</b>	Notice of Proposed Rulemaking (FAA, FCC etc)
<b>NPTG</b>	National Public Transport Gazetteer (UK)
<b>NPV</b>	net present value non-precision approach with vertical guidance
<b>NRC</b>	Navigation Research Centre (NUAA)
<b>NRL</b>	Naval Research Laboratory (US)
<b>NRNP</b>	Norwegian Radionavigation Plan (first edition issued 2003)
<b>NRP</b>	National Route Program (US ATC)
<b>NRS</b>	Navigation-Related Communication Services (GALILEO)
<b>NRT</b>	near real-time net registered tonnage
<b>NRTK</b>	Network Real-Time Kinematic
<b>NRTS</b>	National Roads Telecommunications Services
<b>ns</b>	nanosecond (1/1,000,000,000 of a second)
<b>NS</b>	Naval Station (US)
<b>Ns</b>	nimbostratus cloud
<b>NSA</b>	National Security Agency (US)

<b>NSAP</b>	Network Service Access Point (ATN)
<b>NSAT</b>	number of usable satellites
<b>NSC</b>	National Security Council (US) no significant cloud non-standard C/A code (GPS)
<b>NSCC</b>	Navigation System Control Centre (Galileo)
<b>NSE</b>	navigation system error
<b>NSGU</b>	Navigation Signal Generation Unit (Galileo)
<b>NSO</b>	National Solar Observatory (Tucson, USA)
<b>NSP</b>	navigation signal processor
<b>NSRS</b>	National Spatial Reference System (US)
<b>NSTB</b>	National Satellite Test Bed (WAAS)
<b>NSW</b>	no significant weather
<b>NT</b>	net tonnage
<b>NT</b>	new technology
<b>NTD</b>	National Topographic Database (UK)
<b>NTDS</b>	Navy Tactical Data System (US)
<b>NTE</b>	not-to-exceed
<b>NTF</b>	National Transfer Format (OS format to transfer digital mapping)
<b>NTIA</b>	National Telecommunications and Information Administration (US)
<b>NTM</b>	(NtM) Notice To Mariners
<b>NTP</b>	network time/timing protocol (eg NTPv4 in 2008)
<b>NTRIP</b>	Networked Transport of RTCM via Internet Protocol
<b>NTS</b>	National Travel Survey (UK DTLR) Navigation Technology Satellite
<b>NTSB</b>	National Transportation Safety Board (US)
<b>NTSC</b>	National Television Standard Committee (US/Japan TV standard) National Transportation Systems Center (US)
<b>NUAA</b>	Nanjing University of Aeronautics & Astronautics (China)
<b>NUC</b>	not under command
<b>NUMAST</b>	National Union of Marine, Aviation & Shipping Transp't Officers UK
<b>NUP</b>	NEAN Update Programme (EUROCONTROL) north pole up (of a magnet)
<b>NVC</b>	National Vocational Qualification (UK)
<b>NVEE</b>	night vision enhancement equipment
<b>NVG</b>	night vision goggles
<b>NW</b>	navigational warning (marine)
<b>NWP</b>	numerical weather prediction
<b>NWS</b>	National Weather Service (US)
<b>°</b>	degree (unit of angle = $\pi/180$ rad)
<b>O/B</b>	on board

<b>O/H</b>	overhead
<b>O&amp;M</b>	operations and maintenance
<b>O&amp;S</b>	operations and support
<b>OAB</b>	operational advisory broadcast
<b>OAC</b>	Oceanic Area Control Operations Advisory Committee (CAA)
<b>OACC</b>	Oceanic Area Control Centre
<b>OANS</b>	onboard airport navigation system
<b>OAS</b>	Open Access Service (Galileo basic service, free of charge)
<b>OASIS</b>	Operational and Supportability Implementation System (FAA)
<b>OAT</b>	operational air traffic outside air temperature
<b>OBDS</b>	onboard diagnostic system
<b>OBE</b>	on-board equipment
<b>OBI</b>	omni-bearing indicator
<b>OBO</b>	ore/bulk/oil (carrier)(ship)
<b>OBS</b>	omni-bearing selector
<b>OBT</b>	on-board terminal
<b>OBU</b>	on-board unit (in a vehicle)
<b>OCA</b>	obstacle clearance altitude Oceanic Control Area
<b>OCC</b>	Operations Control Centre (Inmarsat)
<b>OCH</b>	obstacle clearance height (for landing aircraft)
<b>OCIMF</b>	Oil Companies International Marine Forum
<b>OCR</b>	optical character recognition
<b>OCS</b>	operational control system
<b>ODA</b>	Olympic Delivery Authority (UK for 2012)
<b>ODAS</b>	Ocean Data Acquisition System
<b>ODBC</b>	open database connectivity (allows databases to exchange data)
<b>ODBMS</b>	Object Database Management System
<b>ODL</b>	opposite direction level (ATC)
<b>ODN</b>	Ordnance Datum Newlyn (UK system for orthometric height amsl)
<b>ODR</b>	Operations Definition Review (EGNOS)
<b>ODTS</b>	(OD&TS) Orbit Determination and Time Synchronisation (Galileo sys)
<b>OECD</b>	Organisation for Economic Cooperation and Development <i>2004 - Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, South Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Turkey, UK and US.</i>
<b>OEM</b>	original equipment manufacturer
<b>OEP</b>	object-orientated engineering process

	Operational Evolution Plan (US FAA)
<b>OES (USA)</b>	Bureau of Oceans & International Environmental & Scientific Affairs
<b>Ofcom</b>	Office of Communications <i>Took responsibility of UK spectrum management from RA in Dec 03.</i>
<b>OFDM</b>	orthogonal frequency division multiplex
<b>OFFP</b>	operational flight program
<b>Oftel</b>	Office of Telecommunications (UK) (Transfer to Ofcom 29 Dec 03)
<b>OGC</b>	Open GIS Consortium (178 members in 1999) <i>www.opengis.org</i>
<b>OGDI</b>	Open Geospatial Datastore Interface
<b>OHI</b>	Organisation hydrographique internationale (IHO)
<b>OIG</b>	Office of the Inspector General (US DOT)
<b>OJTI</b>	on-the-job training instructor
<b>okta</b>	one-eighth (of cloud cover)
<b>OLED</b>	organic light-emitting display
<b>OM</b>	outer marker (ILS)
<b>OM&amp;S</b>	Operation, Maintenance and Support (US)
<b>OMA</b>	Open Mobile Alliance (for mobile phones) <i>Formed in 2002 by ~200 companies.</i>
<b>OMBO</b>	one man bridge operation
<b>OMEGA</b>	Optimal Method for Estimating GPS Ambiguities (RTK software)
<b>Omega</b>	VLF navigation system now out of service (withdrawn 30 Sep 97)
<b>OMEX</b>	Ocean Margin Exchange (EU MAST project)
<b>OMUX</b>	output multiplexer
<b>ONR</b>	Office of Naval Research (USN)
<b>ONS</b>	Office for National Statistics (UK - independent fm 1 Apr 08)
<b>OnStar</b>	2nd generation in-vehicle nav system (GPS + GSM) (General Motors)
<b>OOD</b>	officer of the deck
<b>OOK</b>	on-off keying
<b>OOP</b>	object-orientated paradigm
<b>OOSA</b>	Office for Outer Space Affairs (UN, based in Vienna)
<b>OOW</b>	officer of the watch
<b>OPA 90</b>	Oil Pollution Act 1990 (USA)
<b>OPE</b>	Operational Elements (EGNOS)
<b>OpEval</b>	operational evaluation
<b>OPF</b>	Operations Preparation Facility (Galileo)
<b>OPG</b>	out-of-plane gyroscope
<b>OPMET</b>	operational meteorology (information)
<b>OPRC 90</b>	Oil Pollution Preparedness, Response and Cooperation (Convention) <i>Adopted by IMO '90, came into force '95. 66 states ratified by '02.</i>
<b>OPRC-HNS</b>	IMO Protocol to expand OPRC 90. Adopted 2000.
<b>OPRG</b>	optical passive ring-resonator gyro

<b>OPTXS</b>	Optical Transport & Synchronization Committee (ATIS)
<b>OPUS</b>	Online Positioning User Service (NOAA for GPS)
<b>OQR</b>	Operations Qualification Review (EGNOS)
<b>ORD</b>	observed range deviation operational requirement document
<b>OREGIN</b>	ORganisation of European GNSS and service INdustries <i>Group of 45 companies to provide public authorities with access to technical and marketing expertise. Led by FDC (France). Formed in 2000.</i>
<b>ORIENTA</b>	System for visually impaired in cities (Spain)
<b>ORR</b>	operational readiness review
<b>Orthodrome</b>	great circle
<b>OS</b>	Open Service (Galileo) <i>Providing position (5-10m) and time (50ns) free of charge, but no integrity info.</i> Ordnance Survey (UK)
<b>OSA</b>	own speed across track
<b>OSAPR</b>	Ordnance Survey ADDRESS-POINT reference
<b>OSC</b>	Office of Space Commercialization (US)
<b>OSCAR</b>	Ordnance Survey digital dataset for mapping UK
<b>OSGB</b>	Ordnance Survey GB (OSGB-36 datum hitherto used on OS charts)
<b>OSGi</b>	Open Service Gateway Initiative (telematics standard)
<b>OSGM91</b>	Ordnance Survey Geoid Model 1991 (UK)
<b>OSI</b>	Open System Interconnection (defined by ISO 7-layer model) Ordnance Survey of Ireland
<b>OSL</b>	own speed along track
<b>OSM</b>	Office of Spectrum Management (US)
<b>OSMM</b>	Ordnance Survey MasterMap (UK)
<b>OSNI</b>	Ordnance Survey of Northern Ireland
<b>OSPAR</b>	Oslo and Paris Commission <i>European body co-ordinating national decisions on maritime environment issues.</i>
<b>OSPF</b>	Orbitography and Synchronisation Processing Facility (Galileo)
<b>OSS</b>	Orbitography and Synchronisation Station (Galileo)
<b>OSTN97</b>	Ordnance Survey National Grid Transformation 1997 (UK) <i>Used to convert from ETRS89 to OSGB36 and ODN.</i>
<b>OSV</b>	offshore support vessel
<b>OT&amp;E</b>	Operational Test and Evaluation
<b>OTA</b>	operational technical accuracy <i>Accuracy with which craft is controlled as measured by indicated craft position with respect to indicated command or desired position. Does not include blunder errors.</i>
<b>OTDOA</b>	observed time difference of arrival (cellphone location technique)

<b>OTF</b>	on-the-fly Open Telematics Framework optimum traffic frequency (best comms freq to use - normally in HF)
<b>OTMR</b>	on-train recording and monitoring system
<b>OTS</b>	Organised Track Structure (N Atlantic)
<b>OVC</b>	overcast (8 oktas of cloud)
<b>OVN</b>	Osterreichischer Verein für Navigation <i>Austrian Institute of Navigation</i>
<b>OWC</b>	obstacle warning and cueing
<b>OWS</b>	OGC Web Services (OWS-2 is Phase 2 Initiative)
<b>OZT</b>	obstacle zone by target
<b>p</b>	pico (SI unit multiplier of $10^{-12}$ ) positioning
<b>P-Code</b>	(or P(Y)) Precision (or Pseudorandom) Code <i>A PRN code transmitted by GPS satellites. Comprises <math>2.35 \times 10^{14}</math> chips sent at 10.23 Mbps, which would take 266 days to send. Each satellite is assigned a unique one-week segment of the code, which is reset each Sat/Sun midnight.</i>
<b>P-CPICH</b>	Primary Common Pilot Channel (GNSS downlink)
<b>P-RNAV</b>	precision area navigation <i>ICAO definition - having a nav performance equal to or better than a track-keeping accuracy of <math>\pm 1</math> NM 95% of time.</i>
<b>P(Y)</b>	encrypted P-Code (comprises modulo-2 addition of P-Code & W-Code)
<b>P/F</b>	platform (of satellite, eg Galileo)
<b>P/L</b>	payload (of satellite, eg Galileo)
<b>P&amp;I</b>	(P and I) Protection and Indemnity (Club)
<b>P3I</b>	pre-planned product improvement
<b>P4</b>	pseudorange and phase post-processor
<b>Pa</b>	pascal (pressure in $N/m^2$ )
<b>PA</b>	position approximate precision approach
<b>PAC</b>	pulse aperture correlator (eg of GPS receiver)
<b>PACF</b>	Performance Assessment & Checkout Facility (EGNOS) <i>Located at Toulouse.</i>
<b>PACT</b>	Pilot Action for Combined Transport (EU) <i>Programme to give financial support for innovative combined transport schemes.</i>
<b>PAD</b>	packet assembly/disassembly device predicted area of danger (ARPA etc)
<b>PADS</b>	Position and Attitude Determination System
<b>PAF</b>	Postal Address File (UK Royal Mail)
<b>PAL</b>	Phase Alternating Line (European TV standard) <i>Uses 25Hz frame rate of 720x576 pixels.</i>

<b>PAM</b>	Precision Approach Module (GNSS landing system)
<b>PAMR</b>	Public Access Mobile Radio
<b>Pan</b>	international radio call signalling 'urgency'
<b>PAN</b>	personal area network (eg Bluetooth) position and navigation
<b>Panamax</b>	<i>Market category of ships notionally within the limit for transit of the Panama Canal.</i>
<b>PANDORA</b>	Prototyping a Navigation Database of Road-Network Attributes
<b>PANORAMA</b>	<i>Personalised Applications based on Reliable Positioning, Communication and GIS Management Systems in Alpine Regions (Germany).</i>
<b>PANS</b>	Procedures for Air Navigation Services (ICAO)
<b>PANSA</b>	Polish Air Navigation Services Agency
<b>PAPA</b>	Parallax Aircraft Parking Aid
<b>PAPI</b>	precision approach path indicator
<b>PAR</b>	precision approach radar
<b>Parallel of altitude</b>	<i>Circle on the celestial sphere parallel to the celestial horizon, connecting all points of equal altitude. Also called circle of equal altitudes.</i>
<b>Parallel of latitude</b>	<i>Circle on the earth's surface parallel to the equator</i>
<b>PARAMOUNT</b>	<i>Public Safety &amp; Commercial Info Mobility Applications in the Mountains. EC project started in 2002.</i>
<b>Paris MOU</b>	Paris Memorandum of Understanding on Port State Control <i>Information on all ships that are inspected is held centrally in an electronic database known as SIRENaC</i>
<b>PAS</b>	Publicly Available Specification (IEC)
<b>PATH</b>	Program(me) on Advanced Technology for the Highway
<b>pax</b>	passengers
<b>PaxCar</b>	RoRo ferry for longer routes with cars, treated as a passenger vessel
<b>PAYD</b>	Pay As You Drive
<b>PB-NAV</b>	Programme Board on Satellite Navigation (ESA)
<b>PC</b>	personal computer phase code (eg LORAN)
<b>PCA</b>	possible course of action
<b>PCD</b>	preferred compass direction (used in animal navigation work)
<b>PCI</b>	phase code interval (LORAN-C)(20 times the GRI)
<b>PCM</b>	pulse code modulation
<b>PCMCIA</b>	Personal Computer Memory Card International Association
<b>PD</b>	public domain
<b>PDA</b>	personal digital assistant (electronic handheld information device) premature descent alert (TAWS)
<b>PDC</b>	personal digital communicator pre-departure clearance (ATC)



<b>PDD</b>	Presidential Decision Directive (US) <i>PDD NSTC-6 (28 Mar 96) applied to GPS. Included provision of SPS free of user charges. Replaced by PNT Policy Directive Dec 2004.</i>
<b>PDF</b>	Portable Document Format <i>Standard for making electronic documents portable. Usually created on Adobe Acrobat Writer and read by Adobe Acrobat Reader.</i>
	probability density function
<b>PDO</b>	process data object
<b>PDOP</b>	positional dilution of precision <i>The factor by which the accuracy of a 3-D fix is degraded by geometrical considerations.</i>
<b>PDR</b>	preliminary design review
<b>PDSS</b>	Pilot Decision Support System (maritime)
<b>PDT</b>	Peripheral Detection Task (to measure objective workload)
<b>PE-90</b>	A Russian terrestrial reference frame (diff from WGS 84 by 1-2 m)
<b>PEC</b>	Pan European Conference (IFALPA)
<b>PED</b>	personal electronic device
<b>PEGASUS</b>	Prototype EGNOS Analysis System Using SAPPHIRE (EUROCONT'L)
<b>Pelagic</b>	of, performed on or belonging to the upper layers of the open sea
<b>PER</b>	packet error rate (comms)
<b>PETAL</b>	Preliminary EUROCONTROL Test of Air/Ground Data Link (prog) <i>PETAL II completed in 2002.</i>
<b>PEU</b>	portable external unit (part of PPU)
<b>PF</b>	primary factor (cause of Loran signal delay - also SF and ASF)
<b>PFA</b>	Popular Flying Association
<b>Pfa</b>	probability of false alarm (eg in RAIM)
<b>PFC</b>	primary flight computer
<b>PFD</b>	personal floatation device position-fixing device power flux density primary flight display
<b>PFI</b>	Private Finance Initiative (UK type of PPP)
<b>PFJS</b>	Portable Field Jamming System (GPS - US)
<b>PFL</b>	practice forced landing
<b>PFM</b>	prototype flight model
<b>PGCAS</b>	Predictive Ground Collision Avoidance System
<b>PHARE</b>	Prog for Harmonised Air Traf'c Manage't & Res'ch in EUROCONTROL
<b>PHM</b>	passive hydrogen maser
<b>PHMI</b>	probability of hazardously misleading information
<b>PI</b>	practice interception pre-planned product improvement presentation interface

<b>PIANC</b>	(AIPCN) Permanent International Ass'n of Navigation Congresses <i>Also known as International Navigation Association. Brussels based.</i>
<b>PIARC</b>	World Road Association
<b>PIC</b>	pilot in command
<b>PIGA</b>	pendulous integrating gyro assembly
<b>PIM</b>	Passenger Information Monitor
<b>PINS</b>	Pipeline Inspection Notification System (ATC)
<b>PIR</b>	portable ILS receiver
<b>PIRT</b>	Purposeful Interference Resolution Team (USA - GPS)
<b>PIS</b>	Passenger Information System (rail)
<b>pixel</b>	picture element <i>The smallest element of a computer display or output that can be controlled.</i>
<b>PK</b>	pseudo-kinematic
<b>PKI</b>	Public Key Infrastructure (for encrypting/decrypting messages)
<b>PL</b>	ice pellets (met) position line (also LOP) pseudolite
<b>Platooning</b>	Automatic close separation between cars (to increase road occupancy) <i>= eConvoy or eTow-bar.</i>
<b>PLB</b>	personal locator beacon
<b>PLC</b>	planar lightwave circuit (eg for connecting FOGs etc)
<b>PLD</b>	programmable logic device
<b>PLEDM</b>	phase-state low electron drive memory
<b>PLF</b>	passenger load factor (% of civil air available seat kilometers used)
<b>PLGR</b>	Precision Lightweight GPS Receiver (US)
<b>PLL</b>	phase-locked loop
<b>PLMN</b>	Public Land Mobile Network (GSM)
<b>PLOC</b>	prolonged loss of contact (air comms)
<b>PLSS</b>	Precision Location Strike System (US)
<b>PM</b>	post meridian (after noon)
<b>PMB</b>	Programme Management Board (Galileo)
<b>Pmd</b>	probability of missed detection (eg in RAIM)
<b>PMO</b>	Port Meteorological Office(r)
<b>PMR</b>	private mobile radio (PMR446 is EU standard) <i>Up to 3 km range; no licence needed.</i>
<b>PMS</b>	planned maintenance system (shipping)
<b>PMU</b>	portable mobile unit (part of PPU) processing and monitoring unit
<b>P<sub>N</sub></b>	north geographic pole
<b>PN</b>	pseudo-noise
<b>PNAV</b>	Precise NAVigation

PND	portable/personal navigation device (typically a PDA)
PNF	Polish Navigation Forum
PNM	pedestrian navigation module
PNR	Passenger Name Records (EU)
	point of no return
	prior notice required
PNT	position/navigation/timing
PNT Exec Ctee	US National Space-Based Positioning, Navigation & Timing Exec Ctee <i>Chaired jointly by Dep Secs of Defense and Transportation. Members: Depts of State, Commerce, Homeland Security, JCS &amp; NASA. Under 2004 Presidential Directive. Ex-IGEB.</i>
PO	dust devils (met)
POB	persons on board
	pilot on board
POC	proof-of-concept
POD	precise orbit determination
POEMS	Pre-Operational European Mode S Station (EUROCONTROL)
POI	point of interest (LBS)
POINT	Position Orientation INTegration (software for UAV nav fm GRC)
POP	period of operation
	point of presence (local area node joining WLAN to trunk network)
	Post Office Protocol (Internet)
POR	Pacific Ocean Region (Inmarsat satellite)
POS/LV	Position & Orientation System for Land Vehicles
POS/NAV	positioning and navigation
PoSAT	Portugese Satellite (-1 carries GPS experiments)
POSSUM	Policy Scenarios for Sustainable Mobility (EU)
Postcode	Units by which delivery of post is managed (Royal Mail) <i>In UK comprises Area (eg SW), District (7), Sector (2) and Unit (AT) - hence SW7 2AT.</i>
POTS	plain old telephone system!
PP	positioning performance
PPC	predicted/potential point of collision
PPD	pilot preference downlink
	Presidential Policy Directive (US)
PPE	personal protective equipment
PPI	plan position indicator
PPL( )	Private Pilot's Licence <i>(A) = aircraft, (B) = balloons, (H) = helicopters, A(M) = microlights.</i>
ppm	parts per million
PPM	pulse position modulation
PPP	precise point positioning

	public-private partnership
<b>PPPS</b>	pulse pairs per second (DME. TACAN etc)
<b>PPS</b>	Precise Positioning Service <i>The full accuracy positioning service provided to the military by GPS. Includes access to unencrypted P-Code transmissions.</i>
	pulses per second
<b>PPS-SM</b>	PPS Security Mode/Module
<b>PPU</b>	pilot portable unit (marine)
<b>PR</b>	banks (met)
	pseudo-range
<b>PRARE</b>	precise range and range-rate equipment (marine)
<b>PRC</b>	Performance Review Commission (EUROCONTROL)
	primary reference clock
	pseudo-range correction
<b>precision</b>	<i>The accuracy of a measurement or a position with respect to random errors (IMO).</i>
<b>Precision Approach</b>	<i>A standard instrument approach procedure in which both horizontal and glidepath/slope guidance is given.</i>
<b>PReVENT</b>	EU IP for preventive & active safety systems (DG Info Society)
<b>PRF</b>	pulse repetition frequency
<b>PRI</b>	pilot receiving instruction (US air)
<b>PRIMAR</b>	The formal service delivered by RENCs (established 1999)
<b>Primary Means of Navigation</b>	<i>Airborne nav system that must meet accuracy and integrity requirements but need not meet full availability or continuity-of-service requirements.</i>
<b>PRIME</b>	Prediction and Retrospective Ionospheric Modelling over Europe <i>A COST project.</i>
<b>Prime meridian</b>	Reference meridian 000°; origin for measurement of longitude <i>Also known as the Greenwich Meridian. The most enduring definition was by Sir George Airy in 1851; this has been replaced by that of WGS -84, which is about 102 metres to the east.</i>
<b>PRM</b>	preferred route message (North Atlantic ATC)
<b>PRN</b>	pseudorandom noise (code) <i>Deterministic binary sequences with noise-like properties, also called pseudonoise codes. Used in spread-spectrum comms and ranging transmissions. GPS C/A and P-Code are PRN codes.</i>
<b>PRNAV</b>	precision RNAV for terminal areas (ICAO)
<b>PROB</b>	probability (met)
<b>ProGIS</b>	Promoting Geographic Information Systems (Finnish AGI)
<b>PRoGRESS</b>	Urban RUC demo & research project (EU-funded)
<b>PROMISE</b>	Pre-operational Modelling in the Seas of Europe (EU MAST III proj)
<b>PROVSS</b>	Processes of Vertical Exchange in Shelf Seas (EU MAST III proj)
<b>PRR</b>	pseudo-range rate

<b>PRS</b>	primary reference source (eg ANSI Stratum 1, GPS or eLoran) Public Regulated Service (Galileo) <i>Uses OS plus 2 encrypted signals giving controlled access and high continuity. The 'military' signal.</i>
<b>PRT</b>	personal rapid transit
<b>PRU</b>	Performance Review Unit (EUROCONTROL)
<b>P<sub>s</sub></b>	south geographic pole
<b>PSAP</b>	public safety answering point (for eCall type applications)
<b>PSC</b>	Port State Control
<b>PSD</b>	power spectral density
<b>PSDR</b>	preliminary system design review
<b>Pseudo-range</b>	<i>Pure geometrical range between satellite and observer, corrupted by clock offsets, atmospheric errors and other error sources.</i>
<b>Pseudolite</b>	Pseudo-satellite <i>Ground-based transmitter designed to mimic a satellite (GPS).</i>
<b>PSF</b>	performance shaping factor (of human behaviour in HRA)
<b>PSMSL</b>	Permanent Service for Mean Sea Level
<b>PSoc</b>	Photogrammetric Society (became RSPSoc on 1 Jan 01)
<b>PSS</b>	packet switching stream
<b>PSSA</b>	Particularly Sensitive Sea Area preliminary system safety analysis
<b>PSTN</b>	Public Switched Telephone Network
<b>PSU</b>	power supply unit
<b>PTAN</b>	precision terrain-aided navigation
<b>PTC</b>	Positive Train Control (US DOT initiative)
<b>PTF</b>	precise timing facility
<b>PTFM</b>	passive traffic flow measurement (eg Trafficmaster)
<b>PTP</b>	packet time protocol (eg PTP IEEE-1588v2 in 2008) personal travel planning (schemes for pedestrians)
<b>PTS</b>	Polar Track Structure Precision Timing System/Station (Galileo)
<b>ptt</b>	press-to-transmit
<b>PTTI</b>	precise time and time interval
<b>PUFFIN</b>	Pedestrian User-Friendly INtelligent crossing (UK DTLR)
<b>PUIN</b>	Russian military air nav backup system based on GLONASS
<b>PUNE</b>	position component of the user navigation error (3-dimensional)
<b>PV</b>	pilot vessel prime vertical
<b>PVA</b>	position, velocity and acceleration (mode of op of integrated system)
<b>PVT</b>	Position, Velocity and Time (Galileo Service)
<b>PVTA</b>	position, velocity, time and attitude
<b>PWC</b>	personal water craft (jetski)

PWSA	Ports and Waterways Safety Act (US)
PZ-90	Soviet geocentric co-ordinate system used by GLONASS (SGS90)
Q	quadrature component
QAR	quick-access recorder (air)
QBC	Quality Bus Corridor (initiative in Glasgow)
QCA	Qualifications and Curriculum Authority (UK) <i>Formed in 1997 by the Education Act 1997.</i>
QDM	magnetic bearing to a DF station
QDR	magnetic bearing from a DF station
QFE	atmospheric pressure at aerodrome elevation
QFI	qualified flying instructor
QFU	runway orientation (magnetic)
QGH	controlled descent through cloud
QGO	airfield closed due to weather
QHM	Queen's Harbour Master
QinetiQ	The private arm of DERA from 2 Jul 01 <i>A nonsensical name taken from the Greek 'kinetikos' - to move.</i>
QINS	QinetiQ Integrated Navigation Simulation
QNH	atmospheric pressure at sea level
QoS	quality of service
QPSK(m)	quadrature phase shift keying (with chip rate of $m \times 1.023$ Mcps)
QRH	quick reference handbook (eg with AOM)
QSW	quiet space weather (assumption for GPS ionospheric delay mode;)
QSY	change frequency
QTAS	QinetiQ Transfer Alignment Simulation
QTE	true bearing from DF station
QUATTRO	Quality Approach in Tendering/Contracting Urban Public Trans Ops <i>An EC project Dec 96 - May 98.</i>
QZSS	Quazi-Zenithal Satellite System (Japan) <i>3-satellite positioning system to supplement and interoperate with GPS. First launch scheduled 2008, the 2nd &amp; 3rd in 2009.</i>
R	°Relative
R-GEO	GEO ranging <i>GEO-based GPS-like ranging signal (as in EGNOS).</i>
R-IORS	re-entrant integrated optical rotation sensor
R/T	(RT) radio telephony
R&D	research and development
R&E	research and engineering
R&TTE	Radio Equipment & Telecommunications Terminal Equipment Directive <i>EC legislation applying to vehicles. Mandatory from 8 Apr 01.</i>

<b>RA</b>	Radiocommunications Agency (UK) <i>Established as an Executive Agency of the DTI in 1990. Transfer to Ofcom 29 Dec 03.</i>
	rain (met)
	resolution advisory (ACAS/TCAS II)
	right ascension
<b>RA(T)</b>	Restricted Area (Temporary) <i>Established temporarily around airshows and other events.</i>
<b>RAAN</b>	right ascension of the ascending node <i>Equatorial angle from a celestially-fixed direction to the ascending node of a satellite orbit. Higher orbit gives lower rate - GPS = 14.15°/year, Galileo = 9.01°/year. Hence constellations will drift relative to each other at 5.14°/year.</i>
<b>RAAS</b>	Regional Area Augmentation System
<b>RAC</b>	Royal Automobile Club (UK)
<b>RACON</b>	RADar beaCON (active radar beacon or transponder)
<b>RACS</b>	road-automobile communication system
<b>rad</b>	radian (180/π degrees)
<b>Radar</b>	RAdio Detection And Ranging
<b>radio determination</b>	<i>The determination of position, or the obtaining of information relating to position, by means of the propagation properties of radio waves (IMO).</i>
<b>radiolocation</b>	<i>Radio determination used for purposes other than radionavigation (IMO).</i>
<b>radionavigation</b>	<i>The use of radio waves in navigation for the determination of position or direction, or for obstruction warning (IMO).</i>
<b>RAeC</b>	Royal Aero Club of the United Kingdom
<b>RAeS</b>	Royal Aeronautical Society
<b>RaFFLES</b>	Radio Frequency Functional Level Evaluation Suite (UK NATS)
<b>RAFS</b>	rubidium atomic frequency standard
<b>RAFS EU</b>	rubidium atomic frequency standard evaluation unit
<b>RAI</b>	Registro Aeronautico Italiano (Italian CAA)
<b>RAIB</b>	Rail Accident Investigation Branch (UK)
<b>RAIDS</b>	Rangeless Airborne Information Datalink System
<b>RAIM</b>	receiver autonomous integrity monitoring <i>A technique whereby all navigation sensor information available at a receiver is autonomously processed to monitor the integrity of the navigation signals (IMO).</i>
<b>RAL</b>	Rutherford Appleton Laboratory (Oxford)
<b>RAM</b>	random access memory
	reliability and maintainability
<b>RAMARK</b>	radar marker beacon
<b>random error</b>	<i>That error which can be predicted only on a statistical basis (IMO).</i>

<b>Rapid/Mocha</b>	<i>Rapid Climate Change/Meridional Overturning Circulation and Heatflux Array) project</i>
<b>RAR</b>	real aperture radar
<b>RAS</b>	radar advisory service (ATC) Radio Astronomy Service (of allocated spectrum bands) rectified airspeed regional augmentation system replenishment at sea
<b>RAT</b>	Risk Awareness Tool (FSF)
<b>RAVI</b>	Netherlands Council for Geographic Information
<b>RBDS</b>	radio broadcast data system
<b>RBI</b>	relative bearing indicator
<b>RBN</b>	radio beacon
<b>RCC</b>	real to complex convertor (signal processing)
<b>RCC</b>	Rescue Co-ordination Centre
<b>RCD</b>	Recreational Craft Directive (EU)
<b>RCDS</b>	raster chart display system
<b>RCL</b>	runway centre line
<b>RCM</b>	reliability centred maintenance
<b>RCP</b>	required communications performance
<b>RCS</b>	radar cross-section (normally given in square metres)
<b>RCVR</b>	receiver (or Rx)
<b>RD</b>	requirements document/definition
<b>RDA</b>	Regional Development Agency (UK)
<b>RDBMS</b>	Relational Database Management System
<b>RDC</b>	Research & Development Center (USCG)
<b>RDF</b>	radio direction find(er)(ing)
<b>RDS</b>	Radio Data System <i>Sub-carrier on FM broadcasts carrying data, which may include DGPS corrections and TMC.</i>
<b>RDS-EON</b>	Radio Data System - Enhanced Other Networks <i>Digital traffic messages carried by RDS.</i>
<b>RDS-TMC</b>	Radio Data System - Traffic Message Channel <i>Digital traffic messages carried by RDS.</i>
<b>RDSS</b>	Radio Determination Satellite Service
<b>READ</b>	RIMS Entities Assistance Desk
<b>RECNET</b>	RECeiver NETwork (eg EGNOS)
<b>REDAN</b>	REd de Datos de Aeropuertos y Navegación (Spanish aero comms net)
<b>redundancy</b>	<i>The existence of multiple equipment or means for accomplishing a given function (IMO).</i>



<b>REG</b>	Red Ensign Group (entitled to fly the Red Ensign/amended version) <i>Anguilla, Bermuda, British Virgin Islands, Cayman Islands, Falkland Islands, Gibraltar, Guernsey, Isle of Man, Jersey, Montserrat and St Helena, Turks and Caicos Islands, United Kingdom.</i>
<b>REGAL</b>	REconfigurable REceiver for GALileo
<b>REIL</b>	runway end identifier lights
<b>relative accuracy</b>	<i>The accuracy with which a user can determine position relative to that of another user of the same navigation system at the same time (IMO).</i>
<b>reliability</b>	(of a position fix) <i>A measure of the propagation of a non-detected gross error in an observation, to the position fix. This 'external' reliability is usually expressed in terms of the MDE (IMO).</i> (of a service) <i>The probability that a service, when it is available, performs a specified function without failure under given conditions for a specified period of time (IMO).</i> (of an observation) <i>('internal' reliability). A measure of the effectiveness with which gross errors may be detected. Usually expressed in terms of the MDB (after IMO).</i>
<b>RENC</b>	Regional Electronic Chart Coordinating Centre <i>Provide a single source for all countries' ENC data. The Northern Europe RENC is at Stavanger, Norway. Service known as PRIMAR.</i>
<b>repeatability</b>	<i>The accuracy of a positioning system, taking into account only the random errors. Normally expressed in a 95% probability circle (IMO).</i>
<b>repeatable accuracy</b>	<i>The accuracy with which a user can return to a position whose coordinates have been measured at a previous time with the same navigation system (IMO).</i>
<b>RESCU</b>	2nd generation in-vehicle nav system (GPS + GSM) (Ford)
<b>RF</b>	radio frequency range finder route to a fix
<b>RFFE</b>	RF front end
<b>RFI</b>	radio frequency interference request for information
<b>RFID</b>	radio frequency identification (eg for air baggage - uses 13.56 MHz)
<b>RFP</b>	request for proposal
<b>RFSINS</b>	rotary FOG-based strapdown inertial navigation system
<b>RFU</b>	radio frequency unit
<b>RGB</b>	Red-Green-Blue (colour system for colour monitors)
<b>RGCSF</b>	Review of the General Concept of Separation Panel (ICAO)
<b>RGPF</b>	Règlement Général de Police Français (French derivative of CEVNI)
<b>RHA</b>	Road Haulage Association Ltd (UK)

<b>RHCP</b>	right hand circularly polarised
<b>RHINO</b>	Receiver for High Integrity Navigation Operation (Raytheon)
<b>RHL</b>	rhumb line
<b>RHS</b>	right hand seat (cockpit)
<b>RHUM</b>	relative humidity
<b>RI</b>	restricted information (eg value-added data on chart)
<b>RIA</b>	Regulatory Impact Assessment (UK requirement)
<b>RIB</b>	rigid inflatable boat
<b>RID</b>	Regulations on international carriage of dangerous goods by rail
<b>RIG</b>	rate integrating gyro
<b>RIMS</b>	Ranging and Integrity Monitoring Station (EGNOS has 12)
<b>RIN</b>	Royal Institute of Navigation
<b>RINA</b>	Registro Italiano Navale (classification society) The Royal Institution of Naval Architects
<b>RINEX</b>	Receiver-INdependent EXchange (format for exchanging GPS data)
<b>RIS</b>	radar information service (ATC) River Information Service (telematics)
<b>RISA</b>	reduced instruction set architecture
<b>RISC</b>	reduced instruction set computer
<b>RISG</b>	Runway Incursion Steering Group (UK CAA)
<b>RITA</b>	Research and Innovative Technology Administration (USA)
<b>RL</b>	rhumb line (loxodrome) <i>Line on the surface of the earth forming the same angle with all meridians; a straight line on a Mercator chart.</i>
<b>RLD</b>	Rijksluchtvaartdienst (Netherlands CAA)
<b>RLG</b>	ring laser gyro (introduced ~ 1975)
<b>RLM</b>	return link message
<b>RLP</b>	rejected landing procedure
<b>RLSS</b>	Royal Life Saving Society (UK)
<b>RM</b>	reference model relative motion
<b>RMA</b>	reliability, maintainability, availability
<b>RME</b>	range measurement equation
<b>RMES</b>	root mean error Square
<b>RMI</b>	radio magnetic indicator
<b>RMRS</b>	Russian Maritime Register of Shipping
<b>rms</b>	root mean square (error) <i>The variability of a measurment such as a single LOP in one dimension; with no bias also an estimate of the standard deviation of the errors.</i>
<b>rmse</b>	root mean square error (see rms)
<b>RMT</b>	National Union of Rail, Maritime and Transport Workers (UK)
<b>RMU</b>	radio management unit

<b>RNAS</b>	Royal Naval Air Station
<b>RNAV</b>	area navigation <i>A method of navigation which permits aircraft operation on any desired flight path within the coverage of station-referenced navigation aids, or within the limits of the capability of a self-contained navigation system, or a combination of these.</i>
<b>RNC</b>	raster navigational chart
<b>RNEU</b>	Radio Navigation Experimentation Unit (ESA)
<b>rng</b>	range
<b>RNLI</b>	Royal National Lifeboat Institution
<b>RNN</b>	RadioNavigeringsNamnden (Swedish Radio Navigation Board) <i>Formed in 1950 with ~ 20 government, institutional and commercial members. Applied for EUGIN membership 2003.</i>
<b>RNP</b>	radionavigation plan required navigation(al) performance <i>A statement of navigational performance necessary for operation under specified conditions. Covers accuracy, availability, integrity and continuity of service. RNP-X (X = 95% prob accuracy in NM).</i> Required Navigation(al) Performance Study Group (ICAO)
<b>RNS</b>	RadioNavigation Service (of allocated spectrum bands) relative navigation system
<b>RNSS</b>	RadioNavigation Satellite Service
<b>ROB</b>	remain on board
<b>ROC</b>	rate-of-climb required obstacle clearance (eg TAWS)
<b>ROHS</b>	Restriction of Hazardous Substances (EC Directive)
<b>ROM</b>	read-only memory
<b>ROMANSE</b>	Road Management System for Europe (EU)
<b>ROP</b>	responsible operator position (in SAR)
<b>RoPax</b>	As RoRo ferry but with 12+ pax and treated as a passenger vessel
<b>ROPME</b>	Regional Organisation for the Protection of the Marine Environment
<b>RoRo</b>	Roll-on, roll-off ferry (<12 pax/drivers and treated as cargo vessel)
<b>RoS</b>	Registers of Scotland (= HMLR)
<b>ROT</b>	rate of TEC (RoT) rate of turn
<b>ROTI</b>	rate of TEC index
<b>ROV</b>	remotely operated vehicle
<b>RP</b>	radar plotting reporting point
<b>RPER</b>	radial position error rate
<b>RPIN</b>	Russian Public Institute of Navigation
<b>RPK</b>	revenue passenger kilometres (a measure of civil air actual traffic)

<b>RPNR</b>	Règlement de Police pour Navigation du Rhin (Rhine deriv of CEVNI)
<b>RPS</b>	Regional Positioning System (to provide WAAS in a particular area) Regional Pressure Setting
<b>RR</b>	Radio Regulations (ITU) reference receiver (eg LAAS)
<b>RRC</b>	range-rate correction root raised cosine (shape of an autocorrelated pulse in navsat sig)
<b>RRI</b>	Road Routing Information (theme of ITN)
<b>RS</b>	radio spectrum ranging source (eg WAAS) reference station (eg LAAS) remote sensing Russian Maritime Register of Shipping (classification society)
<b>RSA</b>	recognised spectrum access relative speed across track Russian Space Agency
<b>RSC</b>	reusable software component <i>Formal acceptance for reusability - US FAA certification.</i>
<b>RSD</b>	radar system data
<b>RSIM</b>	reference station integrity monitor
<b>RSL</b>	relative speed along track
<b>RSM</b>	reduced separation minima (air traffic)
<b>RSME</b>	Rating Scale Mental Effort (to measure subjective workload)
<b>RSN</b>	Robust Surface Navigation (US Army - using 'signals of opportunity') <i>Exploiting satellites, cell phone and television transmitters to provide precise location and navigation information to ground troops when GPS is jammed or blocked.</i>
<b>RSO</b>	Range Safety Officer
<b>RSPSoc</b>	Remote Sensing and Photogrammetry Society <i>Formed 1 Jan 01 from RSS and PSoc. Based Nottingham University.</i>
<b>RSS</b>	Really Simple Syndication (delivers webste info directly to PC) received signal strength Regional Safety Service (Galileo) Register of Shipping and Seamen Remote Sensing Society (became RSPSoc on 1 Jan 01)
<b>rss</b>	root sum square
<b>RSSB</b>	Rail Safety and Standards Board (UK)
<b>RSSI</b>	received signal strength indicator
<b>RT</b>	(R/T) radio telephony Ranging and Timing (Galileo service) remote terminal
<b>RTA</b>	required time of arrival (ATC)

	Research and Technology Agency (NATO - part of RTO)
	Road Traffic Advisor (UK collaborative project led by TRL) <i>Test bed uses 350 km of road between Swansea and Gatwick.</i>
<b>RTB</b>	Research and Technology Board (NATO - part of RTO) return to base
<b>RTC</b>	required terrain clearance (eg TAWS)
<b>RTCA</b>	Radio Technical Commission for Aeronautics (US)
<b>RTCM</b>	Radio Technical Commission for Maritime Services (US) <i>RTCM SC-104 developed the recommended standards for DGPS.</i>
<b>RTD</b>	Research and Technological Development (EU transport projects)
<b>RTE</b>	radar target enhancer (transponder on target) route
<b>RTF</b>	radio telephony
<b>RTI</b>	road traffic informatics (sometimes 'infrastructure')
<b>RTK</b>	real-time kinematic <i>A DGPS procedure whereby carrier-phased corrections are transmitted in real time from a reference rx to user's rx.</i>
<b>RTMT</b>	read the manual training!
<b>RTO</b>	real-time operating system rejected takeoff Research and Technology Organisation (NATO = RTB + RTA)
<b>RTOD</b>	real-time precise orbit & clock determination
<b>RTOS</b>	real-time operating system
<b>RTPI</b>	real-time passenger information (for buses etc)
<b>RTS</b>	Rauch-Tung-Striebel (algorithm used to smooth Kalman filter)
<b>RTT</b>	round trip time
<b>RTTI</b>	real-time traffic and travel information
<b>RTTT</b>	road transport and traffic telematics
<b>RTZ</b>	return to zero
<b>RU</b>	receiving unit rover unit
<b>RUC</b>	road user charging (a form of EFC)
<b>RULES</b>	RA Unified Licensing Executive System
<b>RVR</b>	runway visual range
<b>RVSM</b>	reduced vertical separation minima <i>eg ICAO proposal to reduce vertical separation between aircraft from FL290 to FL410 from 2,000 to 1,000 ft. Introduction in EUROCONTROL 24 Jan 02.</i>
<b>RW</b>	random walk (Kalman filter technique) runway
<b>RWD</b>	relative wind direction
<b>RWS</b>	relative wind speed

<b>Rwy</b>	runway
<b>Rx</b>	(RCVR) receiver
<b>RxQual</b>	quality of reception (GSM)
<b>RYA</b>	Royal Yachting Association
<b>s</b>	second
<b>S-57</b>	Standard for exchange of ECDIS data (IHO)
<b>S-band</b>	Old radar band 2-4 GHz = 15-7.5 cm <i>(ITU assigned 2,300-2,500 &amp; 2,700-3,700 MHz).</i>
<b>S-CRPA</b>	small controlled reception pattern antenna
<b>S-VDR</b>	simplified voyage data recorder (possible retrofit for older ships)
<b>S@tcom</b>	BNSC programme (includes sponsorship of Galileo Partnership)
<b>S/N</b>	signal-to-noise ratio
<b>S/N<sub>0</sub></b>	signal-to-noise density ratio
<b>S&amp;P</b>	simulation & prediction
<b>S&amp;R</b>	(SAR) search and rescue
<b>SA</b>	(S/A) Selective Availability <i>The intentional degradation of the GPS Standard Positioning Service. Was set to give 95% prob accuracies of 100m (300m 99.99% prob) horizontal, 156m vertical and 334ns in time. Set to zero on 1 May 2000.</i>
	sand (met)
	Specific Activity (EU FP6)
	system architecture
<b>SAASM</b>	selective availability anti-spoofing module
<b>SAC</b>	Special Area of Conservation (EU Habitats & Bird Directives)
<b>SADIS</b>	SATellite DIStribution System (Met) <i>Provides point to multi-point real-time met data.</i>
<b>SAED</b>	selected area electron diffraction
<b>SAFA</b>	Safety Assessment of Foreign Aircraft (EU)
<b>SAFEMAR</b>	Development project for ship reporting system (MARIS)
<b>Safety Regulation</b>	Definition & enforcement of rules relating to safety
<b>SAFI</b>	semi-automatic flight inspection
<b>SAG</b>	single axis gyroscope
<b>SAGA</b>	Standardisation Activities for GALileo <i>Platform for establishing world-wide interoperability between Galileo and other systems. Consortium led by Sextant Avionique.</i>
<b>SAL</b>	supplementary approach lighting
<b>SAM</b>	methodology for safety assessment System Area Monitor (eg LORAN)
<b>SAMSO</b>	Space and Missile Systems Organization (US)
<b>SAP</b>	system access parameter (SSR Mode S)

<b>SAPPHIRE</b>	Satellite & Aircr'ft Database Project for System Integrity Research <i>EUROCONTROL project.</i>
<b>SAR</b>	(S&R) search and rescue synthetic aperture radar
<b>SARGAL</b>	study for Search And Rescue in GALileo (EC)
<b>SARIS</b>	Search and Rescue Information System (SARIS II current in 2003)
<b>SARPS</b>	Standards and Recommended Practices (ICAO)
<b>SARSAT</b>	SAR Satellite-Aided Tracking
<b>SART</b>	search and rescue transponder
<b>SAS</b>	Safety Access Service (Galileo) <i>Requirements for aviation safety-critical applications include: En-route &amp; non-precision approach: 45m hor, 15m vert, alert time 30s. Cat I precision approach: 16m hor, 4-7.7m vert, alert time 6s. Cat II/III precision approach: 6m hor, 1m vert, alert time 1s.</i>
	safety at sea
	standard altimeter setting (1013.2 mB or 29.92 in Hg)
<b>SASWG</b>	Spectrum and Surveillance Working Group (CAA)
<b>SAT</b>	Office of Space and Advanced Technology (US) signal analysis tool static air temperature
<b>SATCO</b>	senior air traffic control officer
<b>SATHIA</b>	SATellite Hyperbolic Intersection Algorithm (for integrity)
<b>SATNAV</b>	satellite-based navigation
<b>SATR</b>	Static Antenna Test Range (for GPS jamming tests - US)
<b>SATURN</b>	Consortium researching GNSS quality of service solutions <i>Chronos Technology Ltd, University of Bath, NPL.</i> SATellite-based aUtonomous tRain localisation system
<b>SBAC</b>	Society of British Aerospace Companies Ltd
<b>SBAS</b>	satellite-based augmentation system
<b>SBB</b>	smart buffer box
<b>SBC</b>	single board computer
<b>SBCN</b>	space-based communication network (GNSS)
<b>SBEN</b>	space-based external navigation (system) (GNSS)
<b>SBM</b>	single buoy mooring
<b>SC</b>	sector controller (ATC) service centre (GNSS) Special Committee (eg RTCM SC-104)
<b>Sc</b>	stratocumulus cloud
<b>SCAAR</b>	State Civil Aviation Authority of Russia
<b>SCADA</b>	supervisory control and data acquisition
<b>SCAR</b>	Scientific Committee on Antarctic Research

<b>SCART</b>	Syndicat des Constructeurs d'Aparcils Radioreccepteurs de <i>Also known as Peritel or Euroconnector (for video).</i>
<b>SCAT-1</b>	Special CAT 1 (ILS)
<b>Scatterometer</b>	An instrument which measures dispersal
<b>SCAWVEX</b>	Surface Current and Wave Variability Experiment (EU MAST II)
<b>SCDS</b>	ship control display system
<b>SCF</b>	Satellite Control Facility (Galileo)
<b>SCH</b>	set clearance height (ATC)
<b>ScOACC</b>	Scottish and Oceanic Area Control Centre (ATC)
<b>SCOOT</b>	Split, Cycle and Offset Optimisation Technique <i>Controlling traffic signals automatically to reflect trafic flow.</i>
<b>SCOPIIC</b>	Special Compensation P&I Clause
<b>SCOR</b>	Scientific Committee on Oceanic Research
<b>SCOS</b>	Satellite Control and Operations Support (ESA) <i>Hard/software system for controlling single/multi satellites. SCOS -2000 is latest version, used in many systems, including Galileo.</i>
<b>SCT</b>	scattered cloud (3-4 oktas)
<b>SCU</b>	signal conditioning unit
<b>scUK</b>	sports coach UK (trading arm of the NCF)
<b>SCW</b>	swept continuous wave (transmission, often a form of jamming)
<b>SD</b>	semi-diameter (astro) single-differencing (GNSS relative positioning) standard deviation <i>For a normal linear distribution 68% of readings should lie within 1 SD and 95% with 2 SDs.</i>
<b>SDF</b>	single degree of freedom
<b>SDGPS</b>	Smoothed DGPS
<b>SDK</b>	software developers'/service development kit
<b>SDLC</b>	synchronous data link control
<b>SDME</b>	speed and distance measuring equipment (maritime)
<b>SDO</b>	selective door operating (rail) service data object
<b>SDR</b>	software-defined radio system design review
<b>SDSL</b>	Symmetric Digital Subscriber Line <i>For Web access using normal phone lines at speeds up to 2.3 Mbps.</i>
<b>SDST</b>	Single-Double Summer Time (UK - GMT+1 for winter, +2 for summer)
<b>SDTS</b>	spacial data transfer standard
<b>SEA</b>	strategic environmental assessment



**Sea Areas A1-A4** GMDSS areas representing differing coverage

*A1 - within RT range of at least one VHF coast station in which continuous DSC alerting is available.*

*A2 - excludes A1, but covered by at least MF coast station with continuous DSC alert.*

*A3 - outside A1 & A2 but covered by Inmarsat with continuous alert.*

*A4 - outside A1, A2 and A3.*

<b>SEC</b>	Space Environment Center (US)
<b>SECA</b>	SOx Emission Control Area (to control ships' sulphur emissions)
<b>SED</b>	storm enhanced density (of ionosphere)
<b>Seiche</b>	<i>The oscillation of a body of water at its natural period, superimposed on normal tidal changes.</i>
<b>SEIFR</b>	single-engine IFR
<b>Selcal</b>	selective calling (HF and VHF)
<b>SELS</b>	Southern Europe LORAN-C System
<b>SEM</b>	standard errors of medians (statistics)
<b>semidiurnal</b>	Every 12 hours
<b>SENC</b>	system electronic navigation chart
<b>SEP</b>	spherical error probable <i>The radius of a sphere, centered at the measured position, inside which the true position lies with 50% probability.</i>
<b>SER</b>	sequence-of-events recorder
<b>service capacity</b>	<i>The number of users a service can accommodate simultaneously (IMO).</i>
<b>SES</b>	satellite/ship earth station Shelf Edge Study (part of LOIS project) Single European Sky (EC/EUROCONTROL project)
<b>SESAME</b>	Project to create a European ATM roadmap
<b>SESAR</b>	Single European Sky ATM Research (EUROCONTROL for 2020+) <i>Definition phase in 2006; involves a consortium of 30 companies.</i>
<b>SET</b>	selective event training (of simulation) Sensors and Electronics Technology Panel (NATO RTO)
<b>SETS</b>	Space Event Tracking System (USA)
<b>SF</b>	scale factor secondary factor (cause of Loran signal delay - also PF and ASF) static field stride frequency
<b>SFC</b>	single frequency channel
<b>SFD</b>	satellite failure detection (component of SBAS)
<b>SG</b>	snow grains (met) symbol generator
<b>SGF</b>	Space Geodesy Facility (formally SLR) <i>Worldwide series of laser rangefinders measuring satellite heights up to 19,000 km to about 1 cm accuracy. UK one based at Herstmonceux.</i>

<b>SGR</b>	skywave-to-groundwave ratio (of RF transmission)
<b>SH</b>	showers (met)
<b>SHA</b>	siderial hour angle
<b>SHAG</b>	Small Helicopter Advisory Group (CAA)
<b>SHIPPOS</b>	SHIP POSitioning Reporting Service
<b>SHOM</b>	Service Hydrographique et Oceanographique de la Marine (FR)
<b>SI</b>	Surveillance Identifier (SSR Mode S Code) Système Internationale d'Unités <i>International system of units, the outcome of the 9th General Conference of Weights and Measures in 1948.</i>
<b>SIA</b>	French Aeronautical Information Service
<b>SIAP</b>	standard instrument approach procedure
<b>SIC</b>	second in command (co-pilot or first officer (air))
<b>SID</b>	standard instrument departure sudden ionospheric disturbance
<b>SIF</b>	selective identification feature (ATC secondary radar)
<b>SIG</b>	GIS (geographic information systems) in many languages
<b>sigma</b>	Greek letter $\sigma$ normally used for standard deviation
<b>SIGTTO</b>	Society of International Gas Tanker and Terminal Operators
<b>SIL</b>	safety integrity level system integration laboratory
<b>SIM</b>	subscriber identification module
<b>SIMRSN</b>	Singapore Integrated Multiple Reference Station Network
<b>SINCTA</b>	ATCOs' union in Portugal
<b>single point of failure</b>	<i>That part of a navigation system which lacks redundancy, so that a failure in that part would result in a failure of the whole system (IMO).</i>
<b>SINR</b>	Signal to Noise plus Interference Ratio
<b>SINS</b>	shipborne/strapdown INS
<b>SIOM</b>	standard input/output module
<b>SIP</b>	session initiation protocol single in-line package (chip)
<b>SIPT</b>	Société internationale de photogrammétrie et de télédétection <i>(ISPRS).</i>
<b>SIR</b>	signal-to-interference ratio
<b>SIRC</b>	Seafarers International Research Centre (Cardiff University)
<b>SIReNaC</b>	Database holding ships' info under the Paris MOU
<b>SIRU</b>	space inertial reference unit
<b>SIS</b>	signal-in-space
<b>SISA</b>	signal-in-space accuracy
<b>SISE</b>	signal-in-space error
<b>SISMA</b>	signal-in-space monitoring accuracy

<b>SISNeT</b>	Signal-In-Space through the interNeT (ESA project for EGNOS)
<b>SIU</b>	secure interface unit
<b>SiVSG</b>	Silicon Vibrating Structure Gyro (BAe)
<b>SKC</b>	sky clear (met)
<b>SKYCONTROL</b>	ATCOs' union in Switzerland
<b>sl</b>	(s/l) sea level
<b>SL</b>	step length
<b>SLA</b>	Service Level Agreement (eg for Galileo)
<b>SLD</b>	superfluorescent laser diode
<b>SLR</b>	satellite laser ranging (now called SGF)
<b>SLS</b>	Satellite Landing System
<b>SLV</b>	solar light vessel
<b>SMAC</b>	Scene-Matching & Area Correlation (System)
<b>SMAG</b>	Spectrum Management Advisory Group (RA NDPB)
<b>SMART</b>	Self-Managed Arrival Resequencing Tool (MITRE for FAA) Summing Multiple Artificial Radio Transmitters Trigonometrically <i>A VBM Fourier technique for simulating multiple GPS jammers.</i>
<b>SMarT</b>	Support for Maritime Training Scheme (UK)
<b>Smartnav</b>	In-vehicle satnav using Trafficmaster
<b>SmartNet</b>	Uses NRTK with 142 CORS in UK & Ireland (2008)
<b>SMC</b>	Safety Management Certificate (ISM Code) Space and Missiles Center (USAF)
<b>SMD</b>	smart mobile device
<b>SMEF</b>	System Management & Engineering Facility (LSU)
<b>SMF</b>	separation monitoring function (ATC)
<b>SMG</b>	speed made good (speed (of ship) between 2 fixes)
<b>SMGCS</b>	Surface Movement Guidance & Control System (for airfields)
<b>SMLC</b>	serving mobile location centre <i>GSM network centre that handles the location for handsets.</i> summer mountain leader certificate
<b>SMO</b>	spectrum management organisation
<b>SMRS</b>	surface movement radar system (airfields)
<b>SMS</b>	safety management system Short Message Service (brief text messages over mobile phones)
<b>SN</b>	snow (met)
<b>SNAG</b>	Satellite Navigation Applications Group (EUROCONTROL)
<b>SNAS</b>	Satellite Navigation Augmentation System (Chinese WAAS)
<b>SNCTA</b>	ATCOs' union in France
<b>SNF</b>	satellite navigation frame
<b>SNMTT</b>	Satellite Navigation and Mobile Telephone Technology (CARDME)
<b>SNPWG</b>	Standardisation of Nautical Publications Working Gp (IHO CHRIS)

<b>SNR</b>	signal-to-noise ratio
<b>SNS</b>	standby navigation system
<b>SNU</b>	standard navigation unit
<b>SOA</b>	Silicon Oscillating Acclerometer (for MEMS IMU - Draper Labs) speed of advance (speed to make good) <i>Estimated speed (of ship) relative to the earth.</i>
<b>SOAP</b>	Simple Object Access Protocol (for OpenGIS)
<b>SoC</b>	system on chip
<b>SOCP</b>	Ship Operations Cooperative Program(me) <i>Sponsored by the US Maritime Administration (MARAD).</i>
<b>SOCRATES</b>	System of Cellular Radio for Traffic Efficiency and Safety (EU)
<b>SOG</b>	speed over ground <i>Speed (of ship) relative to the earth, measured on board (the ship).</i>
<b>SOGI</b>	Swiss Organisation for Geo-Information
<b>SOI</b>	signal of interest
<b>SOIT</b>	Satellite Operational Implementation Team (FAA)
<b>SOL</b>	safety of life
<b>SoL</b>	Safety of Life Service (Galileo) <i>Fee-paying service providing integrity info as well as OS features.</i>
<b>SOLAS</b>	Safety of Life at Sea (often SOLAS 74) <i>IMO Convention of 1974.</i>
<b>Sole Means of Navigation</b>	<i>An approved system that must meet 4 performance requirements: accuracy, integrity, availability and continuity-of-service.</i>
<b>SOM</b>	self organising map (of a neural network)
<b>SoOP</b>	signals of opportunity
<b>SOP</b>	standard operating procedure
<b>SoP</b>	Statement of Principles (EC inviting compliance by states) <i>eg a 1999 one was on 'HMI for in-vehicle telematics'.</i>
<b>SOP</b>	surface of position
<b>SOPEP</b>	Shipboard Oil Pollution Emergency Plan
<b>SOSREP</b>	Secretary of State's Rep for Marine Salvage and Intervention
<b>SOTDMA</b>	self-organising time division multiple access
<b>SOURDINE</b>	French for 'mute'. EC DGVII Project for reducing airport noise
<b>SP</b>	service (and content) provider (eg of telematics services) Standard Precision (GLONASS service) <i>Accuracy 57-70 m hor and 70 m vert, vel 15 cm/s (99.7%).</i>
<b>SPA</b>	Special Protection Area (EU Habitats & Bird Directives)
<b>SPACE</b>	Seamless Positioning in All Conditions & Environments (Pinpoint proj) <i>Nottingham University, Leeds University, Imperial College, University College London, EADS Astrium, CAA, Leica GeoSystems, Nottingham Scientific, OS, QinetiQ, BAE Systems, Thales.</i>
<b>SPACECOM</b>	US Space Command (Colorado Springs)

<b>SPAD</b>	signal passed at danger (railway)
<b>SPD</b>	speed (own (ship's) speed in dead ahead direction)
<b>SPEED</b>	Support Platform for EGNOS Evolution and Development
<b>SpeedAlert</b>	EC (DG TREN) project to harmonise in-vehicle speed alert systems <i>One-year project from May 2004.</i>
<b>SPF</b>	Service Products Facility (Galileo) single-point-failure
<b>SPI</b>	ship-port interface (IMO)
<b>SPIRE</b>	Space Inertial Reference Equipment (US first airborne INS - 1953)
<b>SPL</b>	signal power level
<b>SPM</b>	single point mooring
<b>SPOC</b>	SAR Point of Contact
<b>Spoofing</b>	<i>Broadcasting deliberately erroneous nav signals so receivers give the wrong position while appearing to be working correctly.</i>
<b>SPOS</b>	Ship Performance Optimisation System
<b>SPRUC</b>	satellite positioning based road user charging
<b>SPS</b>	Standard Positioning Service of GPS <i>The service available to civilian users with a stand-alone receiver having access only to the C/A code and L1 carrier.</i>
<b>Sps</b>	symbols per second
<b>SPWG</b>	Strategic Planning Working Group (IHO)
<b>SQ</b>	squalls (met)
<b>SQL</b>	Structured Query Language (for databases)
<b>SQM</b>	signal quality monitoring
<b>SQS</b>	Safety Quality Management and Standardisation (EUROCONTROL)
<b>squawk</b>	to transmit via a transponder
<b>sr</b>	steradian (solid angle)
<b>SR</b>	small hail or snow pellets (met) sunrise
<b>SRA</b>	Strategic Rail Authority (UK) surveillance radar approach
<b>SRC</b>	Safety Review Commission (EUROCONTROL) Short Range Certificate (for GMDSS VHF equipment)
<b>SRD</b>	short-range device (eg electronic car key) <i>Typically use 418 MHz in UK, 433.92 MHz in Europe.</i>
<b>SRG</b>	Safety Regulation Group (CAA)
<b>SRGPS</b>	Shipboard Relative GPS (uses LAAS to replace radar)
<b>SRR</b>	Search and Rescue Region short-range radar (usually for vehicles using 24 GHz UWB) system requirements review
<b>SRU</b>	shop-replaceable unit
<b>SS</b>	sandstorm (met)

	signal strength
	space segment
	spread spectrum
	sunset
<b>SSA</b>	Specific Support Action (EU FP6)
	system safety analysis
<b>SSB</b>	single sideband
<b>SSCC</b>	Safety Standards Consultative Committee (EASA)
<b>SSFC</b>	sequential single-frequency code system
<b>SSH</b>	sea surface height
<b>SSI</b>	small scale integration (of chips)
<b>SSKL</b>	ATCOs' union in Slovenia
<b>SSL</b>	signal simulation level
<b>SSN</b>	SafeSeaNet (EU & EEA to exchange info on ship moves & cargo)
<b>SSOA</b>	Standby Ship Operators' Association (became ERRVA in May 2000)
<b>SSOG</b>	solid-state optical gyro
<b>SSPA</b>	solid-state power amplifier
<b>SSR</b>	Sagnac sensing ring (of optical gyro)
	secondary surveillance radar
<b>SSSI</b>	Site of Special Scientific Interest
<b>SST</b>	satellite-to-satellite tracking
	sea surface temperature
	supersonic transport
<b>SSTL</b>	Surrey Satellite Technology Limited
<b>St</b>	stratus cloud
<b>STABLE</b>	Sediment Transport and Boundary Layer Equipment
<b>Standard Time</b>	The legally established time for a given zone
<b>STAP</b>	space-time adaptive processing (eg to produce CRPA)
<b>STAR</b>	Standard Terminal Arrival Route
<b>STARS</b>	Standard Terminal Automation Replacement System (FAA)
<b>StB</b>	Simplifying the Business (IATA initiative)
<b>STC</b>	Supplemental Type Certification (FAA for equipment upgrades)
<b>STCA</b>	Short-Term Conflict Alert (System) (used in ATC centres)
<b>STCW</b>	Standards of Training, Certification & Watchkeeping for Seafarers <i>Set in 1978 (STCW 78) and amended in 1995 (STCW 95).</i>
<b>STDCDU</b>	standard CDU
<b>STDMA</b>	self-organising time-division multiple-access
<b>STEC</b>	slant total electron content (of ionosphere)
<b>STENAV</b>	A Galileo simulation facility (space, ground segment & user)
<b>STEREO</b>	Solar TERrestrial RELations Observatory (2 sats to observe sun - 06)
<b>stick</b>	LORAN-C transmitter (as opposed to a transmitter pair)

<b>Stochastic</b>	Governed by the laws of probability
<b>STOWASUS</b>	Storm, Wave and Surge (EU MAST IV project)
<b>STP</b>	standard temperature and pressure (=ISA)
<b>STPM</b>	synchronizer time-pulse modulator (Chayka)
<b>Stratosphere</b>	Part of atmosphere from ~ 14-50 km
<b>Stratum</b>	Minimum performance requirements for digital network synch <i>ANSI 1987 Standard. Stratum 1 = atomic standard with fractional frequency offset of <math>1 \times 10^{-11}</math> or less. Stratum 2 = drift of less than <math>2.5 \times 10^{-11}</math> per day. Stratum 3 = less than <math>3.7 \times 10^{-7}</math> per day. GPS &amp; eLoran give Stratum 1 quality.</i>
<b>STREP</b>	Specific Targeted Research Project (EC FP6)
<b>STREP</b>	Specific Targeted Research Projects (EU FP6)
<b>STRV</b>	Space Technology Research Vehicle
<b>STW</b>	speed through water (speed of ship relative to the water surface) Standards of Training and Watchkeeping (IMO Sub-Ctee)
<b>SUA</b>	special use airspace
<b>SUBC</b>	self-unloading bulk carrier
<b>SUC</b>	specific use contract
<b>SUCG</b>	Scottish Users' Consultative Group (NLB)
<b>SUP</b>	south pole up (of a magnet)
<b>SUPL</b>	Secure User Plane for Location (protocol for A-GPS)
<b>Supplemental Means of Nav</b>	<i>An approved system that can be used in conjunction with a Sole Means of Navigation.</i>
<b>SURDOV</b>	Joint UK-French project to share data between Dover and Gris Nez
<b>SURNAV</b>	Système français de comptes rendus de mouvements <i>French info and surveillance service for marine navigation.</i>
<b>SUT</b>	Society for Underwater Technology (UK)
<b>Sv</b>	Sverdrup (flow of one million cubic metres of water per second)
<b>SV</b>	space vehicle (eg satellite) synthetic vision
<b>SVD</b>	singular value decomposition
<b>SVFR</b>	special visual flight rules
<b>SVG</b>	scalable vector graphics (eg for maps and charts)
<b>SVGA</b>	Standard display format of 800 x 600 pixels
<b>SVID</b>	space vehicle identifier
<b>SVS</b>	service volume simulation synthetic vision system
<b>SWAN</b>	Sistemi softWare per Applicazioni di Navigazione (Italian Space Agy)
<b>SWEPOS</b>	Swedish permanent national GPS network (24 stations)
<b>SWL</b>	safe working load
<b>SXGA</b>	Standard display format of 1,280 x 1,024 pixels

<b>SXI</b>	Solar X-ray Imager <i>NASA/NOAA imager giving X-ray image of sun each minute for predicting solar flares. Carried on Goes-M.</i>
<b>systematic error</b>	<i>An error which is non-random in the sense that it conforms to some kind of pattern (IMO).</i>
<b>T</b>	°True tera (SI unit multiplier of $10^{12}$ ) tesla (magnetic flux density in $\text{Wb/m}^2$ )
<b>T-DMB</b>	terrestrial digital media broadcasting
<b>T&amp;D</b>	test and development
<b>T&amp;E</b>	test and evaluation
<b>T2CAS</b>	Terrain & Traffic Collision Avoidance System <i>Uses GPS to give terrain avoidance as well as TCAS function.</i>
<b>TA</b>	time advance (method of Cellphone positioning) traffic advisory (ACAS/TCAS I & II) traffic alert (ACAS/TCAS) transition altitude Type Approval
<b>TAA</b>	technically advanced aircraft <i>GA aircraft in which the pilot 'interfaces with one or more computers in order to aviate, navigate or communicate'. Includes a minimum of an IRF-rated GPS with moving map and integrated autopilot.</i>
	terminal arrival area
<b>TACAN</b>	TACTical Air Navigation <i>Military beacon system giving bearing and range.</i>
<b>TACIS</b>	Technical Assistance to the CIS (EU)
<b>TADS</b>	triple air data system
<b>TAF</b>	terminal aerodrome forecast
<b>TAI</b>	Temps Atomique International (International Atomic Time) <i>Determined by comparison of atomic clocks around the world. Does not change with variations of earth rotation rate. Time unit is the SI second, 'the duration of 9,192,631,770 periods of the radiation corresponding to the transition between 2 hyperfine levels of the caesium 133 atom'. TAI = Time (Loran) + 10s = Time (GPS) + 19s = UTC + LS.</i>
<b>TAP-T</b>	Telematics Application Programme - Transport Sector (EU)
<b>TARSUS</b>	Tactical Artillery Survey System (uses GPS)
<b>TAS</b>	true airspeed
<b>TAT</b>	total air temperature
<b>TAWS</b>	Terrain Awareness and Warning System
<b>TB</b>	true bearing (angular distance from TN to the object)
<b>TBO</b>	time between overhauls
<b>TC</b>	telecommand (of satellite)



	terminal control (ATC)
	Tide Committee (IHO)
	true course (course to steer)
	<i>The intended direction of movement (of a ship), defined by the angle between the meridian through its position and the fore-and-aft line (of the ship), expressed in angular units from true north (000°).</i>
	Type Certificate (air)
<b>TCA</b>	The Coastguard Agency (UK)
	<i>Merged with MSA in April 1998 to become MCA.</i>
	time of closest approach
	<i>Time that a satellite is closest to a beacon or rx during a pass.</i>
<b>TCAA</b>	Transatlantic Common Aviation Area
<b>TCAR</b>	three-carrier ambiguity resolution
<b>TCAS</b>	Traffic-alert and Collision Avoidance System (=ACAS in Europe)
	<i>TCAS-I generates conflicting traffic advisories (TAs). TCAS-II also gives collision avoidance instructions (RAs) in vertical plane. TCAS-II with software 7.0 mandated from Mar 01.</i>
<b>TCC</b>	Technical Co-operation Ctee (IMO)
	Traffic Control Centre (UK Highways Agency)
<b>TCG</b>	Training Consultation Group (EUROCONTROL)
<b>TCH</b>	threshold crossing height
<b>TCN</b>	Terminal Control North (UK NATS)
	terrain contour navigation
<b>TCO</b>	total cost of ownership
<b>TCP/IP</b>	Transmission Control Protocol/Internet Protocol
<b>TCPA</b>	target closest point of approach
	time to closest point of approach
<b>TCS</b>	track control system
<b>TCu</b>	towering cumulus cloud
<b>TCXO</b>	temperature compensated/controlled crystal oscillator
<b>TD</b>	time difference
<b>TDA</b>	temporary danger area (ATC)
<b>TDD</b>	time division duplex(ing) (eg GSM phones)
<b>TDEV</b>	time deviation
<b>TDF</b>	two degrees of freedom
<b>TDMA</b>	time-division multiple-access
<b>TDMS</b>	Traffic Demand Management Strategy (UK DTLR)
<b>TDOA</b>	time difference of arrival
<b>TDOP</b>	time dilution of precision
	<i>The factor by which accuracy of receiver clock bias determination is degraded by geometrical considerations.</i>
<b>TDP</b>	touch-down point (landing aircraft)
<b>TDS</b>	Technology Demonstration Systems (Phase of GAGAN - to 2005)

TDWR	terminal doppler weather radar
TEC	total electronic content (typically of ionospheric column) <i>Integrated value of electronic concentration - delay of GPS signal is directly proportional to TEC.</i>
TECU	total electronic content (of ionosphere - measured vertically (UP))
TED	theoretical escape direction (animal navigation)
Tele-parking	Use of SMS to be remotely charged for parking
TELEPAY	EC project for innovative universal transport payment system (FP5)
TEM	transmission electron microscope
TEMPO	temporarily (met)
TEN	Trans-European (Transport) Networks (EU)
terdiurnal	Every 8 hours
TERRNAV	terrain-referenced navigation
TERPS	Terminal Instrument Procedures
TETRA	Trans European Trunked Radio Access <i>ETSI standard for mobile radio used by fleets of vehicles such as emergency services. Combines functions of digital mobile phones, PMR radio systems and mobile data. Uses 410-430 MHz. UK system known as Dolphin. TETRA2 is an upgrade.</i>
TEU	twenty-foot equivalent unit (container)
TF	terrain following track to a fix
TFE	timing and frequency equipment
TFJS	Tactical Field Jamming System (GPS - US)
TfL	Transport for London
TFM	traffic flow management
TFOM	time figure of merit
TFR	temporary flight restriction (US) terrain following radar
TFS	time and frequency solution
TFT	thin film transistor
TFT-LCD	thin film transistor liquid crystal display
Tgd	estimated group delay differential
TGI	Tide Gauge Inspectorate (UK Tide Gauge Network)
TGL	Temporary Guidance Leaflet (JAA)
TGRS	Translated GPS Range System
TH	Trinity House (Corporation of Trinity House, London) <i>Covers England, Wales, Channel Islands and Gibraltar.</i> true heading <i>Actual direction in which the longitudinal axis (of the ship) is pointed, defined by the angle between the meridian through its position and the fore-and-aft line (of the ship), expressed in angular units from true north (000°).</i>

<b>TH-UWB</b>	time-hopping UWB
<b>THD</b>	transmitting heading device
<b>Thermosphere</b>	Part of atmosphere from ~ 85-120 km
<b>THLS</b>	Trinity House Lighthouse Service (Corporation of Trinity House) <i>Covers England, Wales, Channel Islands and Gibraltar.</i>
<b>THUCC</b>	Trinity House User Consultative Committee
<b>THUM</b>	relative humidity
<b>TIA</b>	US Telecomms Standards Institute (equiv of Europe's ETSI)
<b>TIBA</b>	Traffic Information Broadcast for Aircraft
<b>TICTOC</b>	Timing over IP Connection and Transfer of Clock
<b>TID</b>	travelling ionospheric disturbance
<b>TIDE</b>	Technology Initiatives for Disabled and Elderly People (EU)
<b>TIE</b>	time interval error
<b>TIFF</b>	Tagged Image File Format <i>Standard for digital image compression; includes JPEG.</i>
<b>TIGER</b>	Topologically Integrated Geocoding and Referencing (US data f'mat) Traffic Information and Guidance on European Roads (EU DRIVE 2)
<b>TIGNS</b>	tightly-coupled (closed loop) IMU/GPS navigation system
<b>TIH</b>	Traffic Information Highway (carries data from TCCs)
<b>TIS</b>	traffic information service (air)
<b>TIS-B</b>	traffic information services - broadcast
<b>TISPOL</b>	European Traffic Police Association
<b>TL</b>	transition level until (met)
<b>TLM</b>	telemetry
<b>TLS</b>	target level of safety <i>EG for RVSM TLS = <math>2.5 \times 10^{-9}</math> fatal accidents per aircraft flight hour as a consequence of altimetry errors.</i> total least squares Transponder Landing System
<b>TM</b>	telemetry
<b>TMA</b>	terminal manoeuvring area (ATC) Traffic Management Advisor (ATC automation tool)(US)
<b>TMAS</b>	telemedical assistance service
<b>TMC</b>	Traffic Message Channel <i>Digital traffic messages carried by RDS.</i>
<b>TMC Forum</b>	EC forum to coordinate TMC activities (62 industry members in
<b>TMG</b>	track made good (true track between 2 fixes)
<b>TMHD</b>	transmitting magnetic heading device (maritime)
<b>TMS</b>	Testbed Master Station (GRAS)
<b>TMS</b>	TOA measurement system
<b>TMZ</b>	transponder mandatory zone (air)

<b>TN</b>	true north (northerly direction of the meridian)
<b>TNAB</b>	Telecomms & Navigation Advisory Board
<b>TNSE</b>	total navigation system error
<b>TOA</b>	time of arrival <i>In cellphone location could give accuracy of 125 m.</i>
<b>TOC</b>	time of coincidence (eg LORAN-C timing) time of computation top of climb
<b>TOCI</b>	time of coincidence interval (eg LORAN-C timing)
<b>TOD</b>	time of day top of descent
<b>TOE</b>	time of emission
<b>TOGA</b>	take-off and go-around (mode of autopilot)
<b>TOID</b>	Topographic Identifier (polygon features in OS MasterMap) <i>Unique 16-digit reference for data above and below ground.</i>
<b>TOPS</b>	Total Operations Processing System (for train movements)
<b>TORA</b>	take off run available
<b>TORMES</b>	System for visually impaired in cities (uses EGNOS & SISNeT)(Spain)
<b>TORT</b>	Generic legal term relating to breach of duty and liability.
<b>TOT</b>	time of transmission
<b>TOW</b>	time-of-week <i>Least 19 significant bits of GPS Z-Count giving time through the week in 1.5-second units. Truncated version in 6-second epochs included in navigation message HOW.</i>
<b>TP</b>	Thematic Priority (EU FP6)
<b>TPA</b>	taxi position awareness (for aircraft)
<b>TPAS</b>	Traffic Proximity Alert System (air)
<b>TPAT</b>	(C-TPAT) Trade Partnership Against Terrorism (US)
<b>TPEG</b>	Traffic Protocol Experts Group <i>A protocol for relaying traffic information. Used by DAB for in-vehicle systems.</i>
<b>TPS</b>	transmission parameter signalling
<b>TPWS</b>	Train Protection and Warning System
<b>TQM</b>	total quality management
<b>TRA</b>	temporary restricted area (ATC)
<b>Trackstar</b>	System for tracking stolen vehicles (RAC)
<b>TRACON</b>	Terminal Radar Approach Control
<b>Trafficmaster</b>	System that collects road traffic flows and disseminates them (UK) <i>Covers all UK major motorways and most A roads. Expanded into continental Europe from 2001.</i>
<b>TRAN</b>	Terrestrial Regional Augmentation Network (EGNOS)
<b>Transit</b>	discarded US navigation satellite system

<b>TRANSSC</b>	Transport Safety Standards Committee (IAEA)
<b>TRB</b>	Transportation Research Board
<b>TREN</b>	(Directorate General) TRansport and ENergy (EC - was DG VII)
<b>TRIDENT</b>	EC project on data sharing for public transport information systems
<b>trk</b>	track
<b>trkg</b>	tracking
<b>TRL</b>	Transport Research Laboratory (UK)
<b>TRN</b>	terrain-referenced navigation
<b>TROPIC</b>	Traffic Optimisation by the Integration of Information & Control
<b>TRS</b>	Terrestrial Reference System Testbed Reference Station (GRAS)
<b>TRSB</b>	time-referenced scanning beam
<b>TRUCE</b>	Training for Unusual Circumstances and Emergencies (CAA)
<b>true position</b>	<i>The error-free latitude and longitude (2D) and height (3D) co-ordinates in a specified geodetic datum (IMO).</i>
<b>TS</b>	thunderstorm (met) Tracking Station (GPS)
<b>TSA</b>	target speed across track Transport Security Administration (US)
<b>TSAS</b>	Terminal Surveillance & Approach System (air)
<b>TSB</b>	Technology Strategy Board (UK)
<b>TSCPTS</b>	Traffic Signal Controller Performance Test System (UK DTLR)
<b>TSD</b>	traffic situation display (ADS-B)
<b>TSE</b>	total system error (also TNSE = total navigation system error)
<b>TSG</b>	timing signal generator
<b>TSL</b>	target speed along track total signal loss (eg of GPS)
<b>TSL/RD</b>	total signal loss / route duration (% of route time that signal lost)
<b>TSO</b>	Technical Standard Order (US - air)
<b>TSO</b>	Technical Standard Order (US FAA or JAA as JTTSO) <i>TSO C-129a covers certified avionics receivers.</i>
<b>TSPI</b>	time, space and position information
<b>TSS</b>	traffic separation scheme
<b>Tsunami</b>	Wave generated by seismic activity, seismic sea wave
<b>TT</b>	true track (actual path of (ship's) movement relative to the earth)
<b>TT&amp;C</b>	telemetry, tracking and command
<b>TTA</b>	time to alarm/alert <i>The time elapsed between the occurrence of a failure in a system and its presentation to the user (after IMO). Maximum allowable time between the appearance of an error outside the protection limit at the integrity monitor and the broadcast of the alarm (USCG).</i>
<b>TTC</b>	Telemetry & Telecommand Station (Galileo)

	telemetry, tracking & command/control
<b>TTEC</b>	Transport Technology Ergonomics Centre (Loughborough University)
<b>TTF</b>	time to fix
<b>TTFE</b>	time to first fix
<b>TTFU</b>	time to first use
<b>TTG</b>	time to go
<b>TTI</b>	Tourist and Traveller Information
<b>TTS</b>	Transport Telematic System
<b>TUEM</b>	ATCOs' union in EUROCONTROL
<b>TUNE</b>	time component of the user navigation error
<b>TVE</b>	total vertical error
<b>TVOR</b>	terminal VOR (low-powered as an approach aid)
<b>TWD</b>	true wind direction
<b>TWDL</b>	two-way data link
<b>TWG</b>	Transport Council Working Group (EU)
<b>TWP</b>	Technical Work Programme (ICAO)
<b>TWR</b>	tower (air traffic control tower)
<b>TWS</b>	true wind speed
<b>TWSTFT</b>	two-way satellite and time frequency transfer
<b>TWTA</b>	traveling wave tube amplifier
<b>Tx</b>	transmitter
<b>TXC</b>	TransXChange <i>An XML schema for exchange of bus route &amp; schedule data.</i>
<b>TYRO</b>	beginner or novice (used in ATC in emergency situations)
<b>U-TDOA</b>	Uplink-TDOA (to calc cellular phone positions from base stations)
<b>UAC</b>	Upper Air Control
<b>UACC</b>	Upper Air Control Centre
<b>UAIM</b>	user autonomous integrity monitoring
<b>UAIS</b>	Universal Automatic Identification System (IMO MSC 74(69) Anx C)
<b>UAR</b>	upper air route
<b>UART</b>	universal asynchronous receiver-transmitter
<b>UAS</b>	upper airspace service
<b>UASRA</b>	upper airspace special rules area
<b>UAT</b>	universal access transceiver
<b>UAV</b>	uninhabited/unmanned aerial vehicle
<b>UB</b>	unlit buoy
<b>UBS</b>	universal bulk ship
<b>UCAV</b>	unmanned combat air vehicle
<b>UDA</b>	upper advisory area
<b>UDF</b>	UHF direction finding
<b>UDMS</b>	Urban Data Management Society

<b>UDP</b>	User Datagram Protocol (Internet)
<b>UDR</b>	upper advisory route (ATC)
<b>UDRE</b>	user differential range error (eg in WAAS)
<b>UE</b>	user equipment
<b>UERE</b>	(or URE) user equivalent range error <i>Any error contributing to the error budget of a stand-alone satnav rx, expressed as an equivalent error in the range between the user's rx and satellite. Total UERE is the rss of the individual errors.</i>
<b>UHF</b>	ultra high frequency (300-3,000 MHz)
<b>UIC</b>	Union Internationale des Chemins de Fer (based in Paris) <i>International Union of Railways.</i>
<b>UIG</b>	Urban ITS Group (UK DTLR)
<b>UIR</b>	Upper Information Region (FIR above FL245)
<b>UIRE</b>	user ionospheric range error
<b>UITP</b>	Union Internationale de Transport Public
<b>UK SSC</b>	Cabinet Office Spectrum Strategy Committee (UK)
<b>UKAB</b>	United Kingdom Airprox Board
<b>UKCIP</b>	UK Climate Impacts Programme
<b>UKF</b>	unscented Kalman filter
<b>UKHO</b>	United Kingdom Hydrographic Office
<b>UKISC</b>	United Kingdom Industrial Space Committee <i>Sponsored by SBAC and INTELLECT.</i>
<b>UKLFHB</b>	UK Low Flying Handbook (military)
<b>UKMF</b>	UK Maritime Forum <i>Informal forum of ICS, IMarE, NI, RIN, RINA, and SUT.</i>
<b>UKMO</b>	UK Meteorological Office
<b>UKMPA</b>	UK Maritime Pilots' Association
<b>UKOOA</b>	UK Offshore Operators Association
<b>UKSAR</b>	United Kingdom Search & Rescue Committee
<b>UKSCC</b>	United Kingdom Satnav Co-ordination Committee
<b>UKSON</b>	UK Safety of Navigation (MCA Ctee)
<b>ULBC</b>	ultra large bulk carrier
<b>ULCC</b>	ultra large crude carrier
<b>ULCC</b>	ultra large crude carrier
<b>ULI</b>	Research & Development Council for Land (Swedish AGI)
<b>ULS</b>	Up-Link Station (Galileo)
<b>UML</b>	Unified Modelling Language
<b>UMRP</b>	user minimum received power
<b>UMS</b>	Universal Measurement System (shipping)

<b>UMTS</b>	Universal Mobile Telecommunications Service (3G) <i>3rd generation mobile phone standard (2002+) combining speech and internet (IP). Works up to 2 Mbps. Internationally known as IMT 2000.</i>
<b>UN</b>	United Nations
<b>UNCLOS</b>	United Nations Convention on the Law of the Sea
<b>UNE</b>	user navigation error (may be horizontal UHNE or vertical UVNE) <i>Broadly equal to the constellation ranging error <math>\times</math> DOP.</i>
<b>UNIGRACE</b>	Unification of Gravity Systems in Central and Eastern Europe
<b>UNISIG</b>	Railway signalling & comms industry consortium
<b>UNIX</b>	A computer operating system (AT&T)
<b>UNOOSA</b>	United Nations Office for Outer Space Affairs (Vienna, Austria)
<b>UNTOC</b>	un-TOC second offset (LORAN-C)
<b>UPS</b>	uninterrupted power supply
<b>UQ</b>	ultra-quick flashing light
<b>URA</b>	user range accuracy <i>Prediction of max UERE (minus ionospheric error) broadcast in each GPS satellite's navigation message.</i>
<b>Uragan</b>	Name given to GLONASS satellites
<b>URAV</b>	unmanned reconnaissance air vehicle
<b>URE</b>	user range error (see UERE)
<b>URL</b>	Uniform Resource Locator (Internet address)
<b>URSI</b>	Union radio-scientifique internationale
<b>US</b>	user segment
<b>USB</b>	Universal Serial Bus (computer connection at 12 Mbps - intro Jun 98)
<b>USC</b>	United States Code
<b>USCA</b>	ATCOs' union in Spain
<b>USCAHC</b>	US/Canada Hydrographic Commission
<b>USCG</b>	United States Coast Guard
<b>USGIC</b>	US GPS Industry Council
<b>USGS</b>	US Geological Survey
<b>USL</b>	Uniform Shipping Laws
<b>USNO</b>	US Naval Observatory
<b>USPA</b>	user-specific performance analysis
<b>USSPACECOM</b>	US Space Command
<b>UT</b>	Universal Time user terminal
<b>UT0</b>	Uncorrected Universal Time
<b>UT1</b>	UT0 corrected for polar variation <i>The mean solar time of the prime meridian obtained from direct astronomical observation and corrected for the effects of small movements of the earth relative to the axis of rotation (polar variation).</i>



<b>UT2</b>	UTO corrected for polar & seasonal variations
<b>UTC</b>	Co-ordinated Universal Time <i>Corresponds exactly with TAI but differs from it by an integral number of seconds - positive or negative leap seconds - to ensure that the departure of UTC from UT1 never exceeds <math>\pm 0.9</math> secs. GPS time differed by 13 leap seconds in Oct 2000, otherwise always within 100ns.</i>
	Universal Time Control (Galileo)
	urban traffic control
<b>UTD</b>	user terminal demonstrator (eg Galileo)
<b>UTM</b>	Universal Transverse Mercator (using a meridian as line of contact)
	Unusable Time (see also EUTM and AUTM) <i>When a NELS Loran-C transmitter does not transmit signals or when signal is out of tolerance.</i>
<b>UTMC</b>	Urban Traffic Management and Control (DTLR 5-year R&D prog)
<b>UTP</b>	unshielded twisted pair (of wires carrying data)
	user terminal prototype (eg STENAV)
<b>UUV</b>	unmanned underwater vehicle
<b>UWB</b>	ultra-wide band (transmission - typically of GHz over short range )
<b>V&amp;V</b>	verification and validation
<b>VA</b>	volcanic ash (met)
<b>VAAC</b>	Volcanic Ash Advisory Centre <i>Provides reports and forecasts of volcanic ash plumes.</i>
<b>VADR</b>	voice and data recorder (aircraft)
<b>VAFORIT</b>	Very Advanced Flight Data Processing OR Implementation System <i>German DFS contract.</i>
<b>VAL</b>	vertical alert limit/level (eg for WAAS precision approach etc)
<b>VAMS</b>	Virtual Airspace Modeling and Simulation (NASA/Boeing ATC)
<b>VANESSA</b>	Validation and ANalysis of EGNOS Signal within Swiss Airspace
<b>Var</b>	variation <i>Angle between TN and MN, from TN eastwards named E (+), westwards named W (-).</i>
<b>VAS</b>	value-added service
<b>VASIS</b>	Visual Approach Slope Indicator System
<b>VASP</b>	value-added service provider
<b>VBA</b>	vibrating beam accelerometer (for MEMS IMU)
<b>VBM</b>	Variable Butler Matrix (phase-shifters and amps, eg for jamming sim)
<b>VBS</b>	virtual base station
<b>VC</b>	in vicinity (met)
<b>VCA</b>	Vehicle Certification Agency (for EMC of vehicles)
<b>VCASS</b>	Visualisation-based Collision Avoidance Support System
<b>VCR</b>	visual control room (ATC)
<b>VCS</b>	voice communications system (ATC)

VDB	VHF data broadcast
VDF	VHF direction finding
VDL	VHF Digital Link (ARINC) <i>Civil air data link for air-to-ground business and ATS messages. VDL-2 in service in 2001. VDL-3 (TDMA) by about 2007. VDL-4 is latest proposal at 19,200 baud.</i>
VDOP	vertical dilution of precision <i>The factor by which the one-dimensional vertical accuracy of a fix is degraded by geometrical considerations.</i>
VDP	visual descent point
VDR	voyage data recorder
vertical circle	Great circle of the celestial sphere through the zenith & nadir
VEX	Vertical Expansion (programme - eg coverage of 8.33 kHz channels)
VFR	visual flight rules
VGA	Standard display format of 640 x 480 pixels
VGS	VHF ground station visual guidance system
VHDL	VHSIC Hardware Description Language
VHF	very high frequency (30-300 MHz) (metric waves)
VHO	very high orbit (perigee & apogee above GEO of 36,000 km)
VHR	very high risk (marine)
VHSIC	very high speed integrated circuit
VIC	Virtual Identity Card
VICS	Vehicle Information and Communications System (Japan)
ViewNet	Next generation distributed mapping system (UK TSB)
VIKING	<i>1995 project to develop and coordinate traffic management &amp; telematics schemes (Denmark, Finland, Norway, Sweden, N Germany).</i>
VIN	vehicle identification number
VIPS	Vessel Identification and Positioning System (US)
VISTA	Visualising Integrated Information on Buried Assets <i>3-D mapping project to integrate disparate records of buried pipes, cables, ducts and wires.</i>
VITA	vision technology application
VLA	very light aeroplane (not exceeding 750 kg MTOW)
VLBC	very large bulk carrier
VLBI	very long baseline interferometry
VLCC	very large crude carrier
VLE	virtual learning environment (teaching via the web and e-mail)
VLF	very low frequency (3-30 kHz)
VLJ	very light jet (<10,000 lb and cost <\$4 million)
VLSIC	very large scale integrated circuit
VMC	visual meteorological conditions

VML	Vector Mark-up Language
VMS	variable message sign (for roads - may be connected to MIDAS) vehicle management system (avionics)
VNAV	vertical navigation (extension of RNAV)
VNO	virtual network operator (of mobile phones)
VNS	vehicle navigation system
VNSE	vertical navigation system error
VOLMET	meteorological info for aircraft in flight
Volpe	John A Volpe National Transportation Systems Center (US) <i>Produced the report 'Vulnerability Assessment of the Transportation Infrastructure Relying on the GPS', dated 29 Aug 01.</i>
VOR	VHF Omnidirectional Range
VORTAC	collocated VOR and TACAN
VOSL	value of statistical life
VPL	vertical protection limit (WAAS) <i>Used by VAL in precision approach.</i>
VPL <sub>HO</sub>	fault-free vertical protection limit
VPN	virtual private network
VPP	variable pitch propeller
VPS	Vehicle Positioning Systems (=MPS)(term used in Hong Kong)
VR	virtual reality
VRD	virtual retinal display <i>Data projected onto lightweight spectacles.</i>
VRM	variable range marker
VRML	Virtual Reality Model Language
VRP	vehicle routing problem vessel response plan visual reporting point (air)
VRS	virtual reference station (technique for RTK)
VRSS	virtual reality ship simulator
VS	vertical speed
VSAT	very small aperture terminal
VSI	vertical speed indicator
VSWR	voltage standing wave ratio
VTE	vessel technical error
VTEC	vertical total electron content (of ionosphere)
VTIS	vessel traffic information system
VTM	vessel traffic management
VTMD	Vessel Traffic Monitoring Directive (EC Directive 2002/59/EC)
VTMIS	vessel traffic management and information services
VTMIS-NET	VTMIS Network (EC DG VII)

<b>VTMS</b>	vessel traffic management service
<b>vTRC</b>	Virtual Transport Research Centre (ESRC)
<b>VTS</b>	vehicle traffic system
	vessel traffic service/system
<b>VTSO</b>	vessel traffic service operator
<b>VTSS</b>	vessel traffic separation scheme
<b>VUNE</b>	vertical component of the user navigation error
<b>W</b>	watt
<b>W-CDMA</b>	wideband code division multiple access
<b>W-Code</b>	GPS encryption code to add to P-Code to create Y-Code
<b>W/V</b>	wind velocity
<b>W3C</b>	World Wide Web Consortium
<b>WAAS</b>	Wide-Area Augmentation System <i>FAA term describing their GNSS-1, augmenting GPS SPS from a geostationary satellite with additional navigation information plus differential and integrity data. Available for VFR Aug 01, IFR Aug 03</i>
<b>WAC</b>	World Aeronautical Chart (1:1 million scale)
<b>WACAF</b>	Western and Central African Office (ICAO)
<b>WACS</b>	wireless airport communication system
<b>WAD</b>	wide-area differential
<b>WADGPS</b>	wide area DGPS
<b>WAFC</b>	World Area Forecast Centre (London [Exeter 2004] and Washington)
<b>WAFS</b>	World Area Forecast System (ICAO)
<b>WAGE</b>	Wide Area GPS Enhancement
<b>WAH</b>	when able higher (ATC)
<b>WAN</b>	wide area network (often joining together LANs)
<b>WAP</b>	wireless application protocol (rhymes with 'zap') <i>Specification to enable mobile phone, pager or PDA to access the Internet.</i>
<b>WARC</b>	World Administrative Radio Conference (now WRC)
<b>Wb</b>	weber (magnetic flux)
<b>WBMOD</b>	Wide-band Scintillation Model (for GPS)
<b>WCS</b>	Web Coverage Service (of OpenGIS Spec)
<b>WCV</b>	waypoint closure velocity
<b>WDOP</b>	weighted dilution of precision (see DOP)
<b>WEEE</b>	Waste from Electrical and Electronic Equipment (EC Directive)
<b>WEND</b>	Worldwide Electronic Navigational Chart Database (IHO)
<b>WEP</b>	Wired Equivalent Privacy (WiFi security)
<b>WERD</b>	Western European Road Directors
<b>WETREP</b>	Western European Tanker Reporting System (from July 2005?)
<b>WFS</b>	Web Feature Service (of OpenGIS Spec)
<b>WG-GGI</b>	Working Group on Geodesy and Geographic Information

<b>WGS</b>	World Geodetic System <i>A consistent set of parameters describing the size and shape of the earth. Most common system is WGS-84 (1984), used by GPS; uses semi-major axis of 6,378,137 m and flattening of 1/298.257.</i>
<b>white-box testing</b>	Testing that uses knowledge of internal workings and structure <i>See black-box testing.</i>
<b>WiFi</b>	a name for the 802.11 wireless interconnection standard
<b>WIG</b>	wing-in-ground craft
<b>WiMAX</b>	WiFi system with range of 4-6 miles, extendable to 30 miles
<b>WIMP</b>	windows, icons, mouse, pointer (describes windows style displays)
<b>WIP</b>	work in progress
<b>WIPP</b>	WAAS Integrity Performance Panel (US)
<b>WL</b>	water line
<b>WLAN</b>	wireless local area network
<b>WLS</b>	weighted least-squares
<b>WMI</b>	World Maritime Institute
<b>WML</b>	Wireless Markup Language (simplified HTML/XML for WAP etc)
<b>WMO</b>	World Meteorological Organisation
<b>WMS</b>	Web Map Service (of OpenGIS Spec) Wide Area Master Station (WAAS) Wireless Maritime Services
<b>WMU</b>	World Maritime University
<b>WN</b>	wavelet network (for modeling and predicting data) week number
<b>WNT</b>	WAAS Network Time
<b>WNTI</b>	World Nuclear Transport Institute <i>Formed 1998, based in London, 45 member states in 2008. Dedicated to the safe, efficient and reliable transport of radioactive materials.</i>
<b>WOW</b>	weight on wheels
<b>WPA</b>	WiFi Protected Access (WiFi security)
<b>WpB</b>	bearing of a waypoint
<b>WpD</b>	distance to waypoint
<b>WPM</b>	white phase modulation
<b>WPT</b>	waypoint
<b>WRC</b>	World Radio Conference (of the ITU) eg WRC-2000
<b>WRDA</b>	weapons range danger area
<b>WRO1024</b>	GPS week roll-over
<b>WRS</b>	Wide Area Reference Station (WAAS)
<b>WSDL</b>	Web Service Description Language (for OpenGIS)
<b>WSN</b>	Wide Space Network (comms links between satellites)
<b>WSO</b>	Weapons Systems Officer
<b>WSSE</b>	weighted sum of squared errors

<b>WT</b>	water track (path of ship's movement through the water) watertight
<b>WTA</b>	Wireless Telegraphy Act (UK)
<b>WTEMP</b>	water temperature
<b>WUL</b>	worst user location (integrity check)
<b>WV</b>	water vapour
<b>WWNWS</b>	World-Wide Navigational Warning Service (IMO & IHO)
<b>WWRNS</b>	World-wide Radionavigation System <i>Described in IMO Res. A.815(19).</i>
<b>www</b>	World-wide Web (Internet)
<b>Wx</b>	weather
<b>WX NIL</b>	no significant weather
<b>WYSIWYG</b>	what you see is what you get
<b>X-112</b>	extended emergency phone call giving data alongside voice call
<b>X-band</b>	Old radar band 8-12 GHz (ITU assigned 8,500-10,680 MHz) ~ 3 cm
<b>XAL</b>	HAL or VAL
<b>XGA</b>	Standard display format of 1,024 x 768 pixels
<b>XLRP</b>	XML location reporting protocol
<b>XML</b>	Extensible Mark-up Language (complements HTML)
<b>XTD</b>	cross-track distance (perpendicular to ground track)
<b>XTE</b>	cross-track error (perpendicular to ground track)
<b>Y-Code (P(Y))</b>	encrypted P-Code (comprises modulo-2 addition of P-Code & W-Code)
<b>Y2K</b>	Year 2000
<b>YAH</b>	You are here (maps for pedestrians)
<b>Z</b>	zenith (point on the celestial sphere vertically overhead)
<b>Z-Count</b>	Fundamental GPS time unit <i>A 29-bit binary number of which 10 most significant bits give GPS week number and 19 least significant give time-of-week (TOW) count in units of 1.5 seconds. Truncated TOW in 6-sec epochs included in navigation message HOW.</i>
<b>ZD</b>	zone description
<b>ZLG</b>	Zero-Lock Laser Gyro (2 laser gyros in one - Northrop Grumman)
<b>ZT</b>	zone time <i>The local mean time of a reference or zone meridian, whose time is kept throughout a designated zone. The zone meridian is usually the nearest meridian whose longitude is exactly divisible by 15 °.</i>
<b>ZTD</b>	zenith tropospheric delay
<b>ZUPT</b>	zero velocity update (of in-vehicle navigation system)
<b>ZVU</b>	zero velocity update
<b>ZZKRL</b>	ATCOs' union in Poland