

NAVIGATION ACRONYMS, ABBREVIATIONS AND DEFINITIONS

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'	minute (= 1°/60)
112	European emergency phone number (= 911 in US, 999 in UK)
1st4sport	Awarding body of the NCF
Qualifications	
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>
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 ⁻¹⁸)
	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

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

AC	altocumulus cloud Analysis Centre (IGS)
AC(YPS) Act	Activity Centres (Young Persons' Safety) Act 1995 (UK)
Acacia	<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>
ACARE	Advisory Council for Aeronautics Research in Europe
ACARS	Aircraft Communications Addressing and Reporting System (ARINC) <i>Civil air data link for air-to-ground business and ATS messages.</i>
ACAS	Airborne Collision Avoidance System (=TCAS in USA) <i>ACAS-II current from 2000. Mandatory in Europe for ac >5,700 kg MTOW or >19 pax seats from 1 Jan 05.</i>
Acc	altocumulus castellanus cloud
ACC	adaptive cruise control Antarctic Circumpolar Current area control centre (ATC - international; ARTCC in US)
ACCLAIM	Antarctic Circumpolar Current Levels by Altimetry and Island <i>Contributes to the World Ocean Circulation Experiment (WOCE) of the World Climate Research Programme.</i>
accuracy	<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>
ACDS	Aeronautical Charts and Data Section (CAA)
ACE	Advanced Configurable EGI
ACEA	Association des Constructeurs Européens d'Automobiles <i>Represents the interests of 13 European car, truck and bus manufacturers.</i>
ACEM	Agence de Coopération pour l'Europe de la Mer (= ECMA)
ACF	autocorrelation function
ACFD	advanced civil flight deck
ACG	ATM/CNS Consultancy Group (EATCHIP - EUROCONTROL)
ACI	Airports Council International (eg ACI-Europe - 450 airports)
ACK	acknowledge(ment)
ACN	Active Control Network (UK OS) Airspace Co-ordination Notice
ACO	Aircraft Certification Office
ACR	aerodrome control radar
ACRUDA	Assessment and Certification RULEs for Digital Architectures (EU)
ACTD	advanced concept technology demo

ActMAP	EC project to bring real-time info to in-vehicle digital maps
ACZ	aerodrome control zone
AD	air data
	Airworthiness Directive
	<i>Issued by airworthiness authority to correct a defect found after certification. Mandatory.</i>
ADA	advisory area (ATC)
ADACU	advanced digital antenna control unit (eg for GPS steerable array)
ADAM	Airport Datum Management Program (US)
ADAS	Advanced Driver Assistance System
ADC	aerodrome control(ler)
	air data computer
	analogue-to-digital converter
ADCC	Air Defence Control Centre
ADCP	Acoustic Doppler Current Profiler
ADD	airstream direction detector
	average delay per delayed flight (air traffic flow management)
Address Point	An OS gazetteer of postal addresses referenced to the Nat Grid
ADEOS	ADvanced Earth Observation Satellite (Japan)
ADEXP	ATS Data Exchange Protocol (EATMP)
ADF	automatic direction find(er)(ing)
ADI	attitude director indicator
ADM	average delay per movement (air traffic flow management)
ADMAP	Antarctic Digital Magnetic Anomaly Project
ADNM	Admiralty Digital Notice to Mariners
ADONIS	EU project to make cycling and walking safer
ADPCM	adaptive differential pulse code modulation
ADR	accident data recorder
	advisory route (ATC)
ADRIS	automatic DR indicating system
ADRU	Air Defence Radar Unit
ADS	Automatic Dependent Surveillance
ADS-B	Automatic Dependent Surveillance - Broadcast
ADS-C	Automatic Dependent Surveillance - Contract
ADSL	Asymmetric Digital Subscriber Line
	<i>For access to the Web using normal phone lines at speeds between 512 and 2,000 kbps.</i>
ADSP	Automatic Dependent Surveillance Panel (of ICAO)
ADVANCE	Advanced Driver & Vehicle Advisory Navigation Concept (US)
ADVANTIS	Project looking at integrity for liability-critical applications (GJU)

AE	antenna electronics
a_e	Earth's equatorial radius (typically 6.378×10^6 m)
AEA	Association of European Airlines
AEEC	Airlines Electronic Engineering Committee (US)
AEI	air experience instructor
AENA	Aeropuertos Españoles y Navegación Aérea (Spanish ATSP)
AEROSAT	Aeronautical Satellite (Programme)
AESIG	Asociacion Espanola de Sistemas de Informacion Geografica y Territo
AEW	airborne early warning
AF	adaptive filtering
AFB	Air Force Base (US)
AFC	automatic frequency control (eg in radar)
AFCI	arc fault circuit interruption (to detect aircraft wiring problems)
AFCS	automatic flight control system
AFDC	autopilot flight director computer
AFDS	autopilot flight director system
AFG	Advisory Financial Group (EUROCONTROL)
AFI	assistant flying instructor
	automatic fault indication
AFIGEO	Association française pour l'Information Géographique
AFIS	airfield flight information service (info but not control)
AfOL	Association for Outdoor Learning (UK)
AFRIN	Associate Fellow of the Royal Institute of Navigation
AFS	Air Force Station (US)
	atomic frequency standard
AFSS	automated flight service station
AFTN	Aeronautical Fixed Telecommunication Network
AGAS	Action Group for ATM Safety (EUROCONTROL)
	<i>Set up as high-level group as result of 1 Jul 02 mid-air collision.</i>
AGC	Air/Ground Cooperative (Air Traffic Services Programme)
	automatic gain control
AGI	air ground incident
	Association for Geographic Information (UK)
AGILE	Application of Galileo in the LBS environment (EC FP6 2005-07)
agl	above ground level
AGNA	Advisory Group of National Authorities (EASA)
AGNIS	Azimuth Guidance for Nose-in Stand (aircraft parking system)
AGNSS	(A-GNSS) Assisted GNSS
AGO	automatic geophysical observatory

AGORA	Implementation of Global Location Referencing Approach <i>EC telematics project Oct 2000 - Apr 2002.</i>
AGPS	(A-GPS) Assisted GPS
AGU	American Geophysical Union
AHARS	attitude and heading reference system
AHEAD	EUROCONTROL programme to develop web-based AIS
AHMS	Aeronautical Message Handling System (to replace AFTN in 2000+)
AHRS	attitude and heading reference system
AHS	Advanced Cruise-Assist Highway Systems (Japanese concept) automated highway system
AHWG	ad-hoc working group
AI	Accuracy and Integrity (Galileo Service) attitude indicator
AIAA	American Institute of Aeronautics and Astronautics area of intense aerial activity
AIB	Accident Investigation Board
AIC	Aeronautical Information Circular Automotive Information Centre (MIRA)
AIDU	Aeronautical Information Documents Unit (RAF Northolt)
AIG	Association internationale de géodésie (IAG)
AIM	Aeronautical Information Management autonomous integrity monitoring (eg CAIM, RAIM)
AIN	Arab Institute of Navigation
AION	Australian Institute of Navigation
AIP	Administrative Incentive Pricing <i>Spectrum pricing to reflect its value to the user.</i> Aeronautical Information Publication
AIPA	Australian & International Pilots Association
AIPCN	Association Internationale de Navigation (also PIANC) <i>Brussels based - www.pianc-aipcn.org.</i>
AIRPROX	UK term for 'airmiss'
AIRS	Automatic Ship Identification and Reporting System (UK)
AIRWAVES	Project to use GNSS in aircraft to monitor WV (EUROCONTROL)
AIS	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>

AISM	Association Internationale de Signalisation Maritime (IALA)
AIV	all in view
AIWG	Airspace Infringements Working Group (CAA)
AIZ	aerodrome information zone
AL	alert limit/level <i>Max allowable error (in a measured position for example) found during integrity monitoring before an alarm is triggered.</i>
ALA	approach and landing accident
ALAR	Approach and Landing Accident Reduction (FSF initiative)
ALARP	as low as reasonably practicable (of risk in using a system)
Alert	The International Maritime Human Element Bulletin (NI & Lloyd's R)
ALFENS	Automated Low Flying Enquiry & Notification System
ALI	automatic location identification
ALL	Admiralty List of Lights
ALNOT	Alert Notice (of aircraft overdue)
along-track error	<i>A position error in the direction of the intended track (IMO).</i>
ALPA	Air Line Pilots Association (US)
ALPR	automatic licence-plate recognition
ALRS	Admiralty List of Radio Signals
ALS	aerodrome lighting system
AltBOC	<i>Constant envelop modulation scheme for combining 2 sidebands each consisting itself of 2 binary signals (in I- and Q-channel).</i>
AltBOC(n,m)	<i>AltBOC with chipping rate of $m \times 1.023$ Mcps and sub-carrier frequency of $n \times 1.023$ MHz.</i>
AM	amplitude modulation ante meridian (before noon)
AM/FM Europe	Automated Mapping/Facilities Management - European Division
AM/FM It	Automated Mapping/Facilities Management - Italy
AMASS	Airport Movement Area Safety System (FAA) (software package)
ambiguity	<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>
AMCP	Aeronautical Mobile Communication Panel (of ICAO)
AMCS	Alternate Master Control Station (GPS) - Vandenberg AFB
AME	authorised medical examiner (for aviation licences)
AMI-C	Automotive Multimedia Interface Collaboration (telematics standard)
AMLCD	active matrix liquid crystal display
amphidrome	<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>

AMSA	Australian Maritime Safety Agency
AMSD	Aircraft Maintenance Standards Department (CAA SRG)
amsl	above mean sea level
AMSS	Aeronautical Mobile Satellite Service
AMTICS	Advanced Mobile Traffic Info & Communication System (Japan)
AMVER	Automated Mutual-Assistance Vessel Rescue System (USCG)
ANA	area navigation approach
ANASTASIA	<i>Airborne New and Advanced Satellite techniques and Technologies in A System Integrated Approach (EC FP6 project)</i>
ANC	Air Navigation Commission (ICAO)
ANMS	Automated Notice to Mariners System
ANO	Air Navigation Order <i>Statutory legal instrument defining the laws of air navigation, pilot licensing etc in UK.</i>
ANP	actual navigation performance
ANPA	Advanced Notice of Proposed Amendment (JAR-OPS)
ANPAC	Associazione Nazionale Piloti Aviazione Commerciale (It pilots Assoc)
ANPCAT	ATCOs' union in Italy
ANPR	automatic number plate recognition
ANR	active noise reduction
ANSEP	Air Navigation Services Economics Panel (ICAO)
ANSI	American National Standards Institute
ANSP	air navigation service provider
ANT	Airspace and Navigation Team (EUROCONTROL) antenna
AOA	Airport Operators Association angle of arrival
AOB	angle of bank
AOC	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
AOM	aircraft operating manual
AOO	area of operations
AOPA	Aircraft Owners and Pilots Association

AOR	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>
AP	air position Air Publication (RAF) (AP3456 covers navigation) assumed position (estimated pos'n for astronomical sight reduction) autopilot
APAPI	abbreviated precision approach path indicator
APC	airline passenger correspondence (eg e-mail, internet, phone) approach control(ler) (ATC)
API	air position indicator application programming interface
APL	Advanced Positioning Layer (LBS) airport pseudolite
APOLO	Advanced POsition LOcator (train location system using GNSS)
APP	approach (control)
APR	approach control radar
APRS	automatic position reporting system
APTS	Advanced Public Transport System
APU	auxiliary power unit
APV-I	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>
APV-II	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>
AR	augmented reality (VR images overlaid on the real world) autoregressive (form of Kalman filter)
ARA	airspace restricted area
ARB	Airworthiness Requirements Board (CAA)
ARC	Atlantic Rally for Cruisers
ARCC	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>
ARCS	Admiralty Raster Chart Service automatic route control system
ARINC	Aeronautical Radio Inc (now just called 'ARINC') <i>US avionics standards-setting body whose standards are accepted world-wide.</i>
ARKTRANS	Norwegian ITS architecture

ARMAS	Active Road Management Assisted by Satellite (ESA project)
ARN	ATS Route Network
ARNS	Aeronautical RadioNavigation Service (of allocated spectrum bands)
ARP	aerodrome reference point
ARPA	automatic radar plotting aid
ARPU	annual revenue per user (of eg a telematics service)
ARSR	air route surveillance radar
ARTCC	air route traffic control centre (US; ACC internationally)
ARTEMIS	Advanced Relay and TEchnology MISSION Satellite (ESA) <i>Planned to carry EGNOS navigation payload from mid-2001; actually achieved orbit in Jan 2003. 21.5°E.</i>
ARTES	Advanced Research in TElecommunications Systems <i>ESA initiatives. Element 9 involves development work for GNSS.</i>
ARTIST	Austrian Radionav Tech & Integrated Sat Nav Servs & Products Italian ITS architecture
ARU	aircraft retained unit (piece of aircrew equip that stays with the ac)
ARW	angular random walk (of a gyro)
As	altostratus cloud
AS	anti-spoofing <i>Method of protecting against hostile imitation of signals - eg GPS PPS</i>
	aviation safety
ASAB	Association of Animal Behaviour
ASAP	Aviation Safety Action Programme
ASAS	Airborne Separation Assurance System
ASCII	American Standard Code for Information Interchange <i>Comprises letters, digits and special characters each represented by 8 bits or 1 byte.</i>
ASDE	airport surface detection equipment (radar) (can feed AMASS)
ASE	altimetry system error
ASECAP	<i>Association Européenne de Concessionnaires d'Autoroutes et d'Ouvrages à Péage</i>
ASF	additional secondary phase factor (Loran-C) Air Safety Foundation (of the US AOPA)
ASI	Agenzia Spaziale Italiana (Italian National Space Agency) airspeed indicator
ASIC	application-specific integrated circuit
ASK	available seat kilometres (a measure of civil available air capacity)
asl	above sea level
ASL	application simulation level
ASM	airspace management

ASMGCS	Advanced Surface Movement Guidance and Control System (airfield)
ASMI	airfield surface movement indicator
ASMS	advanced satellite mobile system (future comms)
ASOS	Automated Surface Observation System (US - air)
ASP	application service provider
ASQF	Application Specific Qualification Facility (EGNOS - Torrejon)
ASR	airport/airfield surveillance radar
	altimeter setting region
	aviation safety report
ASR-WSP	airport surveillance radar - weather systems processor (FAA)
ASRS	Aviation Safety Reporting System (NASA)
Assignment	<i>Authorisation given by a licensing authority for a radio station to use a specific radio frequency or channel under specified conditions.</i>
ASSIST	Alpine Safety, Security & Informational Services & Technologies
ASTE	Advanced System Telecommunication Equipment programme (ESA)
ASTRA	Application of Space Techniques Related to Aviation
ASTRON	Applications on the Synergy of Earth Obs with Sat Telecoms & Nav <i>Under EC 5th Framework RTD Programme.</i>
Astronomical lat	<i>Angular distance between the plane of the celestial equator and the point's plumb line.</i>
Astronomical lon	<i>Angle between the plane of the prime meridian and the plane of the point's celestial meridian.</i>
ASV	Advanced Safety Vehicle (Japanese concept)
AT	atomic time
AT-VASIS	Abbreviated 'T' Visual Approach Slope Indicator System
ATA	actual time of arrival
ATA	Air Transport Alliance (EU)
	Air Transport Association (US)
	automatic tracking aid
ATAG	Air Transport Action Group <i>Industry lobby gp, 80 members funded by IATA, Boeing and Airbus.</i>
ATC	adaptive tightly-coupled (eg GPS/INS integration)
	air traffic control
	automatic train control
ATC EUC	Air Traffic Control European Union Co-ordination (~8,000 ATCOs)
ATCAA	air traffic control assigned airspace
ATCC	air traffic control centre
ATCO	air traffic control officer
ATCRBS	Air Traffic Control and Radar Beacon System
ATCRU	air traffic control radar unit

ATD	actual time of departure
ATE	along track error
	automatic test equipment
ATF	adaptive transversal filter (eg for minimising jamming signals)
ATFM	air traffic flow management
ATIS	advanced traveller information system
	automatic terminal information station/service
	<i>Continuous broadcast of routine non-control aerodrome information.</i>
ATK	available tonne kilometres
	<i>Measures air available total capacity (combined passenger and cargo).</i>
ATLAS	Airborne Topographic Laser System (QinetiQ)
ATLB	Air Transport Licensing Board
ATM	aerodrome traffic monitor
	air traffic management
	<i>ATM2000 is EUROCONTROL's 'gate-to-gate' strategy initiative to 2015.</i>
Atmosphere	Shell round earth extending to height of 350 km
	<i>Comprises troposphere, stratosphere, mesosphere, thermosphere and ionosphere.</i>
ATMS	advanced traffic management system
ATMSP	Air Traffic Management Service Provider
	<i>eg: AENA - Spain, ANA - Portugal, DFS - Germany, DGAC - France, ENAV - Italy, NATS - UK.</i>
ATMWG	Air Traffic Management Working Group (IATA)
ATN	Aeronautical Telecommunications Network
ATOL	Association of Tour Operators and Leaders
AtoN	(ATON) aid(s) to navigation
ATOP	Advanced Technologies and Oceanic Procedures (FAA)
ATP	Allied Tactical Publication (NATO)
	Automatic Train Protection (UK signalling safeguard)
ATPI	Along the Track Protection Interval (trains)
ATPL	Air Transport Pilot's Licence
ATR	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>
ATS	air traffic service
	Aircrew Training System (USAF)
ATSA	air traffic service assistant
ATSB	Australian Transport Safety Board
ATSI	air traffic services investigations
ATSIN	Air Traffic Services Information Notice (CAA)

ATSOCAS	air traffic services outside controlled airspace
ATSP	Air Traffic Service Provider
ATSU	air traffic service unit
ATT	Admiralty Tide Tables
	advanced transport telematics
ATTS	advanced transport telematics system
ATZ	aerodrome traffic zone
	<i>Usually 2 or 2.5 n miles radius up to 2,000ft aal.</i>
AU	astronomical unit
AUC	Air Transport Users' Council (UK CAA - 12-20 members)
augmentation	<i>Any technique of providing enhancement in order to provide improved navigation performance to the user (IMO).</i>
AUGUR	A predictive GPS receiver autonomous integrity monitoring system <i>EUROCONTROL.</i>
AUM	all-up mass (aircraft)
AUTM	Authorised Unusable Time (NELS Loran-C - see also UTM and EUTM) <i>Scheduled and authorised UTM with at least 72 hrs of notice.</i>
AutoBAHN	Pinpoint project towards millimetre accurate real-time positioning <i>Newcastle University & LogicaCMG.</i>
AUTS	additional user terminal sensor (GNSS)
AUV	autonomous underwater vehicle
AUW	all-up weight (aircraft)
availability	<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>
AVC	automatic vehicle classification
AVCS	advanced vehicle control system
AVG	automatic vehicle guidance
avgas	aviation gasoline (for piston aircraft)
AVI	automatic vehicle identification
AVID	Added Value Information Dissemination (EU project)
AVL	automatic vehicle location
AVLS	automatic vehicle location system
AVM	automatic vehicle monitoring
AVOL	aerodrome visibility operational level
AVT	Applied Vehicle Technology Panel (NATO RTO)
avtur	aviation turbine fuel (kerosine) (for jets/turboprops)
AWAC	airborne warning & control

AWARE	Advanced Weather and Reporting Enhancements <i>Tool being developed by NASA to present better weather info for GA pilots.</i>
AWDS	Automated Weather Distribution System
AWG	aural warning generator
AWGAS	Aerial Work & General Aviation Sub-Ctee (JAA)
AWN	Aviation Weather Network (US)
AWNIS	Allied Worldwide Navigational Information System <i>Classified NATO navigational warning system.</i>
AWO	all-weather operations
AWOP	All-Weather Operations Panel (ICAO)
AWOS	Automated Weather Observing System
AWP	automated weather processor
AWPR	automatic waypoint reporting
AWR	airborne weather radar
AWS	Automatic Warning System (UK railways)
Awy	airway
az	azimuth
B-band	NATO radar band 250-500 MHz = 1.2-0.6 m
B-Call	breakdown call (GPT)
B-GAN	Broadband Global Area Network (432 kbps on Inmarsat I-4)
B-RNAV	basic area navigation <i>ICAO definition - having a nav performance equal to or better than a track-keeping accuracy of ± 5 NM 95% of time.</i>
BA	British Admiralty British Airways
BAA	British Airports Authority
BABS	Blind Approach Beacon System (1941)
BAFEGIS	Baltic Ferry Guidance and Information System
BALPA	British Air Line Pilots Association
BANET	Baltic & N Sea ECDIS Test-Bed
BAPE	best available position estimate
baroclinic	<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>
barotropic	<i>A state in a water mass in which the surfaces of constant pressure are parallel to the surfaces of constant density.</i>
BATA	British Air Transport Association
BATCU	ATCOs' union in Bulgaria
bathymetry	The charting of the ocean floor by taking soundings

BAUA	Business Aircraft Users Association (UK)
baud	rate of transfer of binary messages <i>1 baud = 1 bit per second for most purposes.</i>
BB	Brown Box (Europort pilot portable radio navigation system)
BBAC	British Balloon and Airship Club
BBKMF	Black Box Key Management Facility (Galileo)
BBP	beam bend potential (ILS)
BC	patches (met)
BC Code	Code of Safe Practice for Solid Bulk Cargoes (IMO)
BCAR	British Civil Air Requirements
BCAS	beacon-based collision avoidance system
BCCH	broadcast control channel (GSM phones)
BCD	binary code decimal
BCH	broadcast channel (phone network)
bcn	(BCN) beacon
BCR	bow crossing range
BCS	beacon control system (marine) British Cartographic Society
BCT	bow crossing time
BCU	British Canoe Union
BDIS	Bus Departure Information System
BEA	Bureau Enquêtes-Accidents (French AAIB)
BECMG	becoming (met)
BEDMAP	Antarctic Bedrock Mapping Project
Beidou	Chinese GNSS (means 'Big Dipper') <i>Also known as Twinstar Rapid Positioning System. 2 sats in geosynchronous orbits, may be joined by 2 more.</i>
BER	bit error rate
BEST	Beginning-to-End for Simulation and Training <i>NATS ATC simulation system for NERC.</i>
BFO	beat frequency oscillator
BFU	Bundesstelle für Flugunfalluntersuchung (German AAIB)
BGA	British Gliding Association
BGD	broadcast group delay
BHAB	British Helicopter Advisory Board
BHPA	British Hang Gliding and Paragliding Association
BIAS	Bus Information and Signalling System
BIGF	British Isles GPS (archive) Facility (NERC)
BIH	Bureau International de L'Heure
BIIT	built-in integrity test

Bimco	Baltic and International Maritime Council
BINA	British Isles/North America (eg ERS)
BIPM	Bureau International des Poids et Mesures (under CGPM)
bit	binary digit <i>A single unit of binary data.</i>
BIT	built-in test
BKN	broken cloud (5 to 7 oktas)
BL	blowing (met)
BLA	bi-lateral agreement
Block	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>
BLUE	best linear unbiased estimate
Bluetooth	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 & Toshiba. Named after 10th century Viking king.</i>
BMAA	British Microlight Aircraft Association
BMC	British Mountaineering Council
BMEA	British Marine Equipment Association
BMIF	British Marine Industries Federation Ltd
Bn	beacon
BNEA	British Naval Equipment Association
BNSC	British National Space Centre
BNTS	Beidou Navigation Test Satellite (China)(first 2 launched Oct 00)
BOC	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>
BOCc	binary offset carrier using cosine-shaped sub-carrier
BOD	bearing origin to destination
BOSCA	British Oil Spill Control Association
BOSS	Broad Ocean Surveillance System (US - out to 2,000 NM)
BOSVA	British Offshore Support Vessel Owners Association
BOW	basic operating weight (everything except payload)
BPA	British Parachute Association British Ports Association (Trade association representing ~ 87 ports)
BPEO	Best Practicable Environmental Option
BPL	Basic Positioning Layer (LBS)
BPR	bottom pressure recorder Brinnenvaart Politie Reglement (Dutch derivative of CEVNI)

bps	bits per second
BPSK	bipolar (or binary) phase shift keying
BPSK(m)	BPSK using a chipping rate of $m \times 1.023$ Mcps
BR	mist (met)
brg	bearing
BRNAV	basic area navigation (en route)
BROA	British Rig Owners Association
BS	British Standard
	broadband services
BS EN	British Standards European Norm
BSH	Bundesamt für Seeschifffahrt und Hydrographie (German HO)
BSI	British Standards Institution
BSI/EN/ISO	tri-numbered standard (British/European/International)
BST	British Summer Time
BT	British Telecom
BTS	base transceiver station (phone network)
	Bureau of Transportation Statistics (US)
BV	Bureau Veritas (classification society)
BWB	British Waterways Board
BWC	bearing and distance to waypoint (great circle)
BWPA	British Women Pilots' Association
BWR	bearing and distance to waypoint (rhumb line)
BWW	bearing waypoint to waypoint
By	buoy
byte	binary word (often of 8 bits)
c	centi (SI unit multiplier of 10^{-2})
	speed of light in vacuo ($2.997\,924\,590 \times 10^8$ m s ⁻¹)
C	°Celsius
C of A	Certificate of Airworthiness (issued by CAA in UK)
C of C	Certificate of Conformity (usually of equipment)
C-band	NATO radar band 0.5-1 GHz = 60-30 cm
	Old radar band 4-8 GHz = 7.5-3.75 cm
	(ITU assigned 5,250-5,925 MHz).
C-TPAT	Trade Partnership Against Terrorism (US)
C/A	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>
C/No	carrier-to-noise power density
	<i>Ratio of power level of a signal carrier to the noise power in a 1 Hz bandwidth.</i>

c/s	callsign
C&SMWG	Colours & Symbols Maintenance Working Group (of IHO CHRIS)
C&V	corrections and verification (WAAS software)
C4ISR	<i>Command, Control, Communications, Computers, Intelligence, Surveillance & Reconnaissance.</i>
CA	Coordination Action (EU FP6)
CAA	Cargo Airlines Association (US) Civil Aviation Authority (UK)
CAAC	Civil Aviation Administration of China
CAASD	Center for Advanced Aviation System Development (MITRE US)
CAATS	Canadian Automated Air Traffic System
cable	1/10th nautical mile ~ 185.2 m
CABSINET	Cellular Access to Broadband Services and Interactive Television
CACS	comprehensive automobile traffic control system
CAD	computer-aided design computer-aided dispatch (system)
CADC	central air data computer
CADRT	computer-aided dead reckoning tracer (part of SCDS - USN)
CAE	computer-aided engineering
CAeM	Committee for Aeronautical Meteorology (WMO)
CAEP	Committee on Aviation Environmental Protection (ICAO)
CAIC	configurable avionics interface card
CAIM	craft autonomous integrity monitoring
CAIV	cost as an independent variable
CALDOVREP	Dover Mandatory Reporting System
CALF	Chart Amendment - Low Flying
CALM	catenary anchor leg mooring
CAM	computer-aided manufacture
CAMELOT	Coastal Area Modelling for Engineering in the Long-Term (MAFF)
CAMUS	an in-vehicle data bus
CAN	controller area network (in-vehicle data link protocol)(EN 50325-1)
CANopen	Application layer & comms profile for CAN-based networks <i>Specified in prEN 50325-4.</i>
CANP	Civil Aviation Notification Procedure (for low-level flying)
CANPA	constant-angle precision approach (air)
CANSO	Civil Air Navigation Services Organisation
CAO	Coordinating Agency Office (NELS)(Oslo, Norway)
CAP	central alerting post Civil Aviation Publication Condition Assessment Programme (survey)

CAPA	Coalition of Airline Pilots' Associations (US)
Capstone	FANS ADS-B system implemented in Alaska from early 2001
CARAD	Civil Aerospace Research and Development (Programme) (DTI)
CARAT	CNS Appl'n for Intern'l & Regional Airp'ts App, Lndg & Dep Traffic
CARDME	Concerted Action on Road Demand Management in Europe
CARIN	Car Information and Navigation System <i>Autonomous in-car route guidance system from Philips.</i>
CARPILOT	An autonomous in-car navigation system <i>Uses DR and map-matching. Netherlands.</i>
CAS	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
CASC	China Aerospace Science & Technology Corporation
CASE	Collaborative Awards in Science and Engineering (fund PhD students)
CASITAF	CNS/ATM Systems Implementation Task Force
CASST	Commercial Aviation Safety Strategy Team (FAA)
CAT	clear-air turbulence commercial air traffic <i>Scheduled/non-scheduled passenger flights in airliners and helicopters.</i> <i>Cargo flights.</i>
CAT I	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 & 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>
CAT II	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>
CAT III	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>
CATCU	ATCOs' union in Croatia

CATRIV	Conceptual Analysis for Transportation on Rivers (EU)
Cave Review	Review of UK radio spectrum management by Prof Cave (March 2002)
CAVOK	'cav-okay' - ceiling and visibility OK <i>Basically visibility at least 10km and no cloud below 5,000ft.</i>
CAVU	ceiling and visibility unlimited <i>Cloudless or scattered cloud and visibility over 10km.</i>
CB	compass bearing (angular distance from CN to the object)
Cb	cumulonimbus cloud
CBA	cost benefit analysis
CBI	computer-based information
CBM	conventional buoy marking
CBT	computer-based training
CC	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>
CCB	Control Centre Brest (NELS)
CCC	Carrier Container Council central control system
CCD	charge coupled device cursor control device
CCF	Central Control Facility (EGNOS) common cause failure Constellation Control Facility (Galileo) cross-correlation function
CCG	Canadian Coast Guard
CCIR	International Radio Consultative Committee (of ITU) <i>Now called ITU-R.</i>
CCITT	International Consultative Ctee on Telephony and Telegraphy (of <i>Now called ITU-T.</i>
CCO	Certificate in Coaching Orienteering (L2CCO is Level 2)
CCRI	capacitively coupled resistivity imaging
CCS	China Classification Societies complex conjugate symmetric (often refers to signal filters)
CCSDS	Consultative Committee on Space Data Standards
CCW	coded continuous-wave coherent continuous-wave

	counter-clockwise
CCZ	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
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 2006. 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>

CEN	Comité Européen de Normalisation <i>European standards body for IT.</i>
CENC	China-Europe GNSS Technical Training and Cooperation Centre
CENELEC	Comité Européen de Normalisation Electrotechnique <i>European Committee for Electrotechnical Standardisation. Central Secretariat based in Brussels.</i>
CEO/JRC	Centre for Earth Observations/Joint Research Centre
CEP	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
CEPT	Conference of European Postal Telecommunications Administrations
CER	Community of European Railways
CERCO	Comité Européen des responsables de la cartographie officielle
CERGOP	Central European Region Geodynamics Project (CEI) <i>Phase 1 concluded 1998 led to CEGRN. CERGOP-2 from 2000.</i>
CES	coast earth station (same as LES operationally)
CESA	Committee of EU Shipbuilders' Associations
CESAR	Certification Policies, Procedures & Requirements <i>For satellite-based navigation and landing systems and corresponding research activities.</i>
CEST	Centre for Exploitation of Science and Technology
CETRF	Central European Terrestrial Reference Frame
CEV	Centre d'Essais en Vol (French national flight test centre)
CEVNI	Code Européen de Voie de la Navigation Intérieur <i>The rules for inland waters of mainland Europe.</i>
CF	compact flash (memory card - typically up to 640 Mb) course to a fix
CFAR	constant false alarm rate (eg radar)
CFI	certified flight instructor (US) chief flying instructor (UK)
CFIT	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>
CFMU	Central Flow Management Unit
CFR	Code of Federal Regulations (US)
CG	Coastguard
CGAS	Coast Guard Air Station (US)
CGOM	Consultative Group on Ocean Mapping (IOC)

CGPM	Conférence Général des Poids et Mesures (Paris) <i>Authorised by the Convention of the Metre in Paris in 1875. Now 51 signatories.</i>
CGPS	continuous GPS (station)
CGS	Civil GPS Service
CGSIC	Civil GPS Service Interface Committee
CGU	code generation unit (GNSS rx)
Ch	Channel
CH	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>
CHA	Competent Harbour Authority
CHAPI	carrier helicopter approach path indicator
Chayka	Russian LORAN-C system
chip	binary element or digit that conveys no information
CHIRP	Confidential Human Factors Incident Reporting Procedure (UK CAA)
CHO	Cooperating Hydrographic Office (of RENC)
CHP	Civil Hydrography Programme
CHRIS	Ctee on Hydrographuc Requirements for Information Systems (IHO)
CHS	Canadian Hydrographic Service
CI	cell identity number (phone network)
Ci	cirrus cloud
CIAIAC	<i>Comision de Investigacion de Accidentes e Incidentes de Aviacion Civil of Spain.</i>
CIC	cave instructor certificate
CIDIN	Common ICAO Data Interchange Network
CIL	Commissioners of Irish Lights (known as Irish Lights) <i>Covers all of Ireland.</i>
CILT(UK)	The Chartered Institute of Logistics and Transport in the UK <i>Was ILT until May 2004.</i>
CIN	China Institute of Navigation
CIPM	Comité International des Poids et Mesures (under CGPM)
CIR	channel impulse response cockpit image recorder
CIRM	Comité International Radio-Maritime
CIS	Commonwealth of Independent States
CISC	complex instruction set computer
CIT	Chartered Institute of Transport
CITE	conformity & interoperability test & evaluation

CIWG	Communication Infrastructure Working Group (IATA)
CL	Civil-Long (proposed GPS L2 code carrying no data - alongside CM) correlation loss
Class	Category in classification register
Class A or B	Class of AIS installation (A for large ships, B for leisure craft)
CLCS	Commission on the Outer Limits of the Continental Shelf (UN)
cld	cloud
CLGE	Comité de liaison des géomètres Européens
CLI	caller line identification
CM	Civil-Moderate (proposed GPS L2 code carrying data - alongside CL)
CMA	Central Monitoring Agency (NATS)
CMATZ	combined military air traffic zone
CMCU	Clock Monitoring and Control Unit (Galileo)
CME	coronal mass ejection (from sun)
CMG	course made good (rhumb line direction between 2 fixes)
CMIC	Civil Military Interface Unit (EUROCONTROL)
CMOS	complementary metal oxide semiconductor
CMR	civil marine radar
CMU	communications management unit
CMYK	Cyan, Magenta, Yellow and black (colour system for printing)
CN	compass north <i>Northerly direction of the needle or zero-index of a magnetic compass.</i>
CNC	computer numerically controlled
CNES	Centre Nationale d'Etudes Spatiales (French National Space Agency)
CNIG	Centro Nacional de Informacao Geografica (Portugal)
CNIS	Channel Navigation Information Service (Dover)
CNS	communications, navigation and surveillance
COA	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>
COBA	cost-benefit analysis
CoC	Certificate of Competency
CODA	Central Office of Delay Analysis (EUROCONTROL)
CODE	Center for Orbit Determination in Europe
COG	course over the ground <i>Direction of (the ship's) movement relative to the earth, measured on board (the ship).</i>
COGR	continuously operating GPS receiver
COLREGs	International Regs for Preventing Collisions at Sea (IRPCS) (IMO)

CoM	centre of mass
Combi-Road	<i>Segregated track for automatic transport control and delivery of container freight cargoes (Netherlands).</i>
COMEDS	CONUS Meteorological Distribution System
COMESA	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>
Compatability	no significant inter-system interference
COMSAR	Sub-Ctee on Radiocommunications and Search and Rescue (IMO)
confidence interval	<i>The numerical range within which an unknown is estimated to be with a given probability.</i>
confidence level	<i>The percentage of confidence that a given statement is correct or that a stated interval includes an unknown.</i>
confidence limits	<i>The extremes of confidence interval.</i>
CONOPS	Concept of Operations (US)
continuity	<i>The ability of a system to function within specified performance limits without interruption during a specified POP.</i>
CONUS	Continental United States
CONVERGE	Completed (2000) EU project on deployment of ITS
Conversion angle	<i>Angular difference between rhumb line and great circle between two points.</i>
COOPATS	Cooperative ATS Concept (EUROCONTROL)
CoP	centre of phase Conformity of Production (assessment of client under VCA)
COP	common operating picture
COPUOS	Committee on the Peaceful Use of Outer Space (UN)
correction	<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>
CORS	continuously operating reference station (DGPS)
COS	continuity of service
COSH	Committee on Shipping Hydrography
COSPAR	Committee on Space Research (42 countries + 12 scientific bodies)
COSPAS-SARSAT	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>
COSS	Committee on Safe Seas (EU)
COST	COoperation in the field of Scientific & Technical research <i>Cooperation between 17 European countries: Austria, Belgium, Czech Rep, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Ireland, Netherlands, Slovakia, Spain, Sweden, Switzerland & UK.</i>
CoSWP	Code of Safe Working Practices for Merchant Seamen

COTS	commercial off-the-shelf (equipment)
coverage	<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>
COZDIS	Coastal and Oceanic Zones Display and Information System
CP	charging point (for road user charging)
CPA	closest point of approach
CPD	carrier phase difference (signal processing)
	collaborative product design
CPDLC	controller-pilot data link communications
	<i>CPDLC Build 1 is based on VDL Mode 2.</i>
CPE	customer premises equipment
CPF	Central Processing Facility (EGNOS, MSAS)
CPFPS	Central Processing Facility Processing Set (EGNOS)
CPGS	cassette preparation ground station (flight planning)
CPL	commercial pilot's licence
	current performance level
CPLD	complex programmable logic device
CPM	Conference Preparatory Meeting (ITU)
CPS	central processing station (GNSS)
cps	cycles per second (Hz)
CPU	central processing unit
CRC	cyclic redundancy code (check)
CRCO	Central Route Charges Office (EUROCONTROL)
	<i>Responsible for the collection of aviation navigation charges.</i>
CRM	cockpit (or crew) resource management
	collision risk model
cross-track error	<i>Position error perpendicular to the intended track.</i>
CRP	compulsory reporting point
CRPA	controlled radiation pattern antenna (eg to combat GPS jamming)
CRS	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>
CRT	cathode ray tube
CRU	carrier removal (signal processing)
Cs	cirrostratus cloud
CS	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
CSE	course
	course selection error
CSEL	Combat Survivor Evader Locator (US)
CSG	Centre Spatial Guyanais (CNES/ESA launch area close to equator) <i>In French Guyana; ideal for launching geostationary satellites.</i>
	computer symbol generator
CSMA	carrier sense multiple access
CSOC	Consolidated Space Operations Centre
CSR	Cab Secure Radio (rail at UHF, but band to be shared from 2006)
CSS	Code of Shipmanagement Standards
	customer service station (Galileo)
CT	computerised tomography (to image ionosphere electron density)
CTA	control area (ATC)
CTAF	Common Traffic Advisory Frequency (used at small airfields in USA)
CTAS	Centre-TRACON Automation System (FAA) <i>ATC automation tools - TMA, FAST and DA.</i>
CTK	cargo tonne kilometres (a measure of civil air capacity)
CTP	Common Transport Policy (EU)
CTR	Chain Time Reference (LORAN-C) (CTZ) control zone (ATC)
CTS	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>
CTSC	Converging Technology and Services Committee (FEI)
CTU	cargo transport unit
CTW	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>
CTZ	(CTR) control zone (ATC)
Cu	cumulus cloud
CUAP	Chart User's Advisory Panel (of HO)
CUG	closed user group
CUPT	coordinate update
CURSOR	proprietary positioning system using GSM phones
CV	common view (mode of operating GPS or LORAN for time transfer)
CVHS	Co-operative Vehicle Highways System ('platooning' of vehicles)
CVN	continuous visual navigation

CVO	commercial vehicle operat/or/ion
CVR	cockpit voice recorder
CVRS	computerised vehicle routing and scheduling
CW	clockwise
	continuous-wave
CWAAS	Canadian WAAS
CWI	continuous-wave interference
CWP	controller working position (ATC)
CWS	collision warning system
cyber-car	remote controlled or self-driving robot vehicle - a form of PRT
CYCC	Conference of Yacht Cruising Clubs (main UK clubs)
CZIN	Czech Republic Institute of Navigation
d	deci (SI unit multiplier of 10^{-1})
D Region	Lowest part of ionosphere where most HF absorption occurs by day
D-AMPS	A type of DTMA used by some 2G mobile phone systems
D-ATIS	Digital Automatic Terminal Information Service (air)
D-band	NATO radar band 1-2 GHz = 30-15 cm
D-OTIS	(DOTIS) Digital Operational Terminal Information Service (air)
d.lat	difference of latitude <i>Shorter arc of any meridian between the parallels of 2 places.</i>
d.lon	difference of longitude <i>The shorter arc of a parallel between the meridians of 2 places.</i>
D&D	Distress and Diversion (UK ATC facility)
D2B	International multimedia networking protocol for use within vehicles
da	deca (SI unit multiplier of 10^1)
DA	decision altitude (referenced to sea level) Descent Advisor (ATC management tool)(US)
DAB	digital audio broadcast(ing)
DAC	digital-to-analogue converter
DADI	datalinking of aircraft-derived information
DAGR	Defense Advanced GPS Receiver (US)
DAISY	Digital Automatic Identification System
DAP	database assisted positioning Directorate of Airspace Policy (CAA) downlinked aircraft parameter (SSR Mode S)
DAPS	data access protocol system (ATC Mode S)
DARC	data radio channel
DARPA	Defense Advanced Research Projects Agency (US)
DARS	Digital Audio Radio Service (satellite broadcast)

DASB	Defence Aviation Safety Board (UK)
DASC	Defence Aviation Safety Centre (UK - Bentley Priory) <i>UK tri-Service formed in 2002 to develop, regulate and audit policy.</i>
Datatrak	proprietary navigation system (Siemens UK) <i>Coherent LF DTMA navigation system giving an accuracy <50 m. Transmitters about 120 km apart.</i>
dB	decibel <i>Power ratio in dB = $10\log(\text{power ratio})$. Voltage or current ratio in dB = $20\log(\text{voltage or current ratio})$.</i>
DBF	digital beam-forming (antenna)
dBi	decibels, isotropic
DBTF	database terrain following
dBW	decibel watts (power level relative to 1 watt)
DCB	differential code bias (eg of a GPS satellite)
DCDB	Data Centre on Digital Bathymetry
DCE	data circuit-terminating equipment
DCPC	direct controller/pilot communications
DCPS	differentially corrected positioning service
DCT	direct
DD	double-differencing (GNSS relative positioning)
DDC	digital down-converter
DDF	divided difference filter
DDG	dispatch deviation guide (associated with MEL)
DDGI	German umbrella organisation for geoinformation
DDM	difference in depth of modulation
DDRC	Diving Diseases Recompression Chamber (Poole, UK)
DDV	Design, Development and In-Orbit Validation (phase of Galileo) <i>~ 2001-2005.</i>
dead ahead	direction ahead of a (ship's) fore-and-aft line
Dec	declination
Decca	hyperbolic LF navigation system <i>In UK funded by THLS until 31 Mar 00.</i>
DECT	Digital European Cordless Telecommunications <i>Short range speech or data system. TDMA on 1.88-1.90 GHz.</i>
DEFRA	Department for the Environment, Food and Rural Affairs (UK)
deg	degrees
DELTA	Specification for vehicle DSRC modules and OBTs (EC)
DEM	digital elevation model (for charting etc)
Demeter	Digital Electronic Mapping of European Territory <i>Covers data standards for road networks for nav systems.</i>

Dep	departure <i>Distance between 2 meridians at any given parallel of latitude, expressed in nautical miles.</i>
DERA	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>
DES	Data Encryption Standard
Dest	destination
DETR	Department of the Environment, Transport and the Regions (UK) <i>Ceased in Jun 01 - most became DTLR.</i>
Dev	deviation <i>Angle between MN and CN, from MN eastwards named E (+), westwards named W (-).</i>
DF	direct to a fix
DFDAU	digital flight data acquisition unit
DFDR	digital flight data recorder
DFDRS	digital flight data recording system
DFGC	digital flight guidance computer
DFGS	digital flight guidance system
DFHRS	Digital Finite Element Height Reference Surface (German HRS)
DFIS	Digital Flight Information Services
DFS	Deutsche Flugsicherung GmbH (German ATSP)
DfT	Department for Transport (UK)
DFTI	distance from touchdown indicator
DG	degaussing directional gyro Director-General
D_g	distance between 2 points on a great circle (orthodromic distance)
DG Range	degaussing range
DG TREN	Director General TRAnsport and ENergy (EC - was DG VII)
DGAC	Direction Général a l'Aviation Civile (French CAA)
DGLONASS	Differential GLONASS
DGNSS	Differential GNSS
DGON	Deutsche Gesellschaft für Ortung und Navigation e.V. <i>German Institute of Navigation.</i>
DGPS	(or D-GPS) Differential GPS
DGS	data gathering station
DGT	digital GPS translator (of TGRS)

DH	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>
DHS	Department of Homeland Security (US)
DI	direction indicator
DIA	detection, identification and adaptation
differential system	<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>
DIN	Deutsches Institut für Normung e.V. (German standards body)
DIRECTS	Demo of Interoperable R'd user End-to-end Charging & Telematics
DIS	Draft International Standard (ISO) Driver Information System
dist	distance
DIW	dead in water
DL	datalink
D_L	distance between 2 points on a rhumb line (loxodromic distance)
DLat	difference in latitude
DLL	delay locked loop
DLong	difference in longitude
DLORAN	Differential LORAN
DLR	Deutsches Zentrum für Luft-und Raum-Fahrt <i>German National Space Agency.</i>
DLT	digital linear tape
DMA	Defense Mapping Agency (US)(now NIMA)
DMC	digital magnetic compass digital management computer
DME	distance measuring equipment
DMP	difference of meridional parts
DMS	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>
DNA	Direction de la Navigation Aérienne (French ATSP)
DNC	digital nautical chart
DNF	Digital National Framework (OS)
DNS	Decca Navigator System (withdrawn in UK 31 March 2000)
DNV	Det Norske Veritas (classification society)
DOA	direction of arrival (method of Cellphone positioning)
DoD	Department of Defense (US)

Dolphin	A UK TETRA system
DOMNR	Department of Marine and Natural Resources (Ireland)
DOP	dilution of precision <i>A dimensionless number that accounts for the contribution of relative satellite geometry to errors in position determination.</i>
DORIS	Doppler Orbitography and Radiopositioning by Satellite
DOT	Department of Transportation (US)
DOTIS	(D-OTIS) Digital Operational Terminal Information Service (air)
DP	dew-point dynamic positioning
DPDR	delta preliminary design review (Galileo)
DPS	dynamic positioning system
DQI	Digital Quartz Inertial Measurement Unit (Boeing, US)
DQM	data quality monitoring
DR	dead (deduced) reckoning drifting (met)
DR _{cor}	corrected DR position <i>Estimated position obtained by adding to the last fix course (track) and speed.</i>
DRG	digital route guidance
DRI	driver restriction information (eg info on blocked roads)
Drift angle	<i>Angular difference between: (Sea) course of advance and course through water; (Air) heading and track.</i>
DRISL	Data Relay Inter-Satellite Links (part of WSN)
DRIVE	Dedicated Road Infrastructure for Vehicle Safety in Europe (EU)
DRL	data relay link (eg between satellite and ground)
DRM	digital road map
dRMS	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>
DRN	data radio network
DRS	dead reckoning system differential reference station
DRT	demand responsive transport (small buses etc)
DS	duststorm (met)
DS-CDMA	direct-sequence code-division multiple access
DS-UWB	direct-sequence UWB
DSB	double sideband
DSC	Dangerous Goods, Solid Cargoes and Containers (IMO) digital selective calling (GMDSS)

	dynamically supported craft
DSI	detailed spectrum investigation
DSM	digital surface model (for charting)
DSN	Deep Space Network
DSP	digital signal process(ing)(or)
DSRC	dedicated short-range communication (system)
DSS	decision support system
DSSR	Digital Short-Range Radio <i>Direct connection between hand-portables over short distances. Typically use 880-890 and 933-935 MHz.</i>
DST	data storage tag (used to record eg depth profiles of tagged fish) daylight saving time
Dstl	Defence Science and Technology Laboratory (UK - ex-DERA) <i>Formed on 1 Apr 01 as the defence arm of what was DERA.</i>
DSTO	Defence Science and Technology Organisation (Australia)
DSV	diving support vessel
DT&E	Development Test and Evaluation (comes before OT&E)
DTE	data terminal equipment
DTED	digital terrain elevation data(base)
DTEO	Defence Test and Evaluation Organisation (Division of DERA)
DTG	distance to go dynamically tuned gyro
DTI	Department of Trade and Industry (UK)
DTLR	Department for Transport, Local Government & the Regions (UK) <i>Formed from DETR in Jun 01.</i>
DTM	digital terrain model
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)
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-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-field	electric-field (eg of aerial)
E-LORAN	Enhanced LORAN <i>Modern transmitters & 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-OTD	enhanced observed time difference (gives 100m position from
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>
E2PROM	electrically erasable programmable read-only memory
EAD	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>
EADI	electronic attitude director indicator
EAG	European ATFM Group (EUROCONTROL)
EAL	Echelle Atomique Libre (Free Atomic Time) <i>The weighted mean of >260 international atomic clocks.</i>
EANPG	European Air Navigation Planning Group (ICAO)
EAS	equivalent airspeed
EASA	European Aviation Safety Authority (EU - operational on 28 Sep 03)
EAT	estimated (or expected) approach time
EATCHIP	European ATC Harmonisation and Integration Prog (EUROCONTROL)
EATMP	European Air Traffic Management Programme (EUROCONTROL)
EATMS	European Air Traffic Management System <i>Under EUROCONTROL's ATM2000 initiative.</i>
EBCDIC	extended binary-coded decimal interchange code (8-bit)
EBL	electronic bearing line (radar)
EBM	electronic bearing marker

EBU	European Broadcasting Union <i>66 member states in Europe and Mediterranean area plus 51 associate member states.</i>
EC	European Commission
ECA	European Cockpit Association
	European Common Frequency Allocation Table
ECAC	European Civil Aviation Conference (42 European states in 2006)
eCall	Pan-European in-vehicle emergency call system (mandatory by 2009)
ECAM	electronic centralised aircraft monitor
ECASBA	EU Association of Shipbrokers and Agents
ECC	electronic chart centre
ECCG	Experimental Centre Consultation Group (EUROCONTROL)
ECDIS	electronic chart display and information system <i>Hardware and software that can display ENC data.</i>
ECEF	earth-centred earth-fixed (coordinate frame)
ECI	earth-centred inertial (reference frame)
ECINS	electronic charting and integrated navigation system
ECLAYR	EGNOS Continuous Logging AnALyseR
ECOMM	European Conference on Mobility Management (EU) (eg ECOMM '97)
ECOTTRIS	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>
ECP	Engineering Change Proposal European Common Proposal (for WRC)
ECPINS	Electronic Chart Precise Integrated Navigation System (US)
ECS	electronic chart system
ECSA	European Community Shipowners' Association
ECU	electronic control unit (in vehicle)
ED	European Datum <i>Most commonly used is ED-50 (of 1950). This uses a non-geocentric geoid to express latitude & longitude within Europe.</i>
EDAS	EGNOS Data Access System
EDC	early display configuration
EDGE	Enhanced Data-rate for GSM Evolution
EDI	electronic data interchange
EDM	electronic distance measurement
EDPG	European Data Producers' Group
EDRM	European digital road map

EDU	electronic display unit
EEA	European Environment Agency
EEIG	European Economic Interest Group (for ERTMS)
EELV	Evolved Expandable Launch Vehicle (USAF - covers GPS launches)
EET	estimated elapsed time
EETES	EGNOS End-to-End Simulator
EETS	European Electronic Toll Service
EEZ	exclusive economic zone
EFB	electronic flight bag (replaces paper charts & documentation)
EFC	electronic fee collection (includes ERP, ETC, RUC etc)
EFCS	electronic flight control system
EFDR	electronic flight data recorder
EFI	external functionality interface (Telematics Forum WAP interface)
EFIS	electronic flight instrument system
EFT	European Transport Workers' Federation
EGAS	European Guaranteed Access to Space (ESA programme) <i>Support for European launch service (2005-09).</i>
EGATS	European Guild of Air Traffic Services
EGC	enhanced group calling
EGDOP	extended geometric dilution of precision
EGI	embedded GPS inertial (eg US GPS JPO programme)
EGII	European Geographic Information Infrastructure
EGIS	European Conference on GIS
EGNOS	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>
EGPWS	Enhanced Ground Proximity Warning System
EGR	embedded GPS receiver
EGS	European Geophysical Society (Katlenberg-Lindau, Germany) European GNSS Secretariat (to the ETG)
EHF	extremely high frequency (30-300 GHz)
EHMA	European Harbour Masters' Association
EHS	enhanced surveillance <i>Aircraft identification, airspeed, altitude, vertical velocity + other info via SSR Mode S.</i>
EHSI	electronic horizontal situation indicator
EIDS	European Integrity Determination System
EIFS	Advanced Integrated Fare System (Motorola smart card system)

EIRP	(eirp) equivalent isotropically radiated power <i>Theoretical measure of power of a transmitter that radiates equally in all directions. Usually in dBW.</i>
EIV	errors in variables
EJN	European Journal of Navigation (DGON, NIN & NNF)
EKF	extended/enhanced Kalman filter
ELBA	Emergency Location Beacon, Aircraft (ELT)
ELFAA	European Low Fares Airline Association
ellipsoid	<i>A solid of which all plane sections through one axis are ellipses and all other plane sections are ellipses or circles.</i>
ELM	extended length message (ATC Mode S)
eLORAN	Enhanced LORAN
ELOS	extended line-of-sight
ELS	elementary surveillance (aircraft identification via SSR Mode S)
ELT	emergency location terminal emergency location transmitter <i>Transmitter fixed to aircraft which transmits on emergency frequencies on impact or immersion.</i>
ELTIS	European Local Transport Information Service (EU) <i>Can be found at www.eltis.org.</i>
EM	electromagnetic engineering model
EMC	electromagnetic compatibility <i>Ability of equipment or systems to be used within designated environments without causing or receiving electromagnetic interference.</i>
EMCA	European Maritime Core Area
EMCON	emission control
EMEC	European Maritime Equipment Council
emf	electromotive force
EMI	electromagnetic interference
EMILY	Project for the hybridisation of satellite and cellular positioning (EC) <i>Completion Dec 04.</i>
EMP	electromagnetic pulse
EMPA	European Maritime Pilots' Association
EMRF	European Maritime Radionavigation Forum <i>Independent body formed December 1999 from the European GNSS Maritime Advisory Forum.</i>
EMRP	effective monopole radiated power
EMS	EGNOS Message Server

EMSA	European Maritime Safety Agency (EC - formed in 2002 post-'Erika')
EN	Européen Normalisation (European Standard)
ENAC	Italian CAA
ENAV	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)
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)
EOSI	Earth Observation Science Initiative (NERC)
EOTD	enhanced observed time difference (cellphone location technique) <i>Could give accuracy of <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
EPFD	equivalent power flux density
EPFS	electronic position-fixing system
EPIRB	Emergency Position-Indicating RadioBeacon
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)

EPROM	erasable programmable read-only memory
EPS	ECDIS Performance Standard (IMO) Encapsulated Postscript (graphic file format) EUMETSAT Polar System (operational met & climate monitoring) <i>Comprises 3 Metop satellites.</i>
EPSRC	Engineering and Physical Sciences Research Council (UK)
EPVS	electronic plotting video symbols (maritime)
EQM	electrical qualification model
Equator	primary great circle of the earth
equatorial angle	angle along the equator in the direction of earth rotation
ER	extended range
ERA	European Regional Airlines Association European Research Area
ERAM	En Route Automation Modernisation (US FAA)
ERBL	electronic range and bearing line (radar)
ERC	en-route chart European Radiocommunications Committee
ERD	estimated range deviation
ERDM	equation restore difference method (eg for DGPS)
ERF	European Union Road Federation (part of IRF)
ERGS	electronic route guidance system
ERIC	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>
ERNP	European Radionavigation Plan
ERO	European Radiocommunications Office (of the ERC) <i>Based in Copenhagen. www.ero.dk.</i>
EROPS	extended range operations (aircraft)
ERP	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)
ERRI	European Rail Research Institute (based in Utrecht, NL)
ERRV	Emergency Response and Rescue Vessel
ERRVA	Emergency Response and Rescue Vessel Association <i>Was the SSOA until May 2000.</i>
ERS	En Route Supplement (for aircrew) European Remote Sensing satellite

ERTICO	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>
ERTMS	European Rail Traffic Management System (EU) <i>ETCS + GSM-R + ETML + HEROE.</i>
ES	electronic support (form of EW) environmental surveillance
ESA	electronic sub-assembly European Space Agency <i>Inter-government body promoting European space technology for peaceful applications. Formed 1975. Comprises (2004) Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland & UK.</i>
ESAF	Eastern and Southern African Office (ICAO)
eSafety	EU initiative for in-vehicle systems (established 2001)
ESARR	EUROCONTROL Safety Regulatory Requirements
ESD	electro-static discharge
ESDI	European Spatial Data Infrastructure
ESGN	electrically-suspended gyro navigator
ESNP	European Satellite Navigation Programme (ETG)
ESOC	European Space Operations Centre
ESP	European Space Policy
ESPO	European Sea Ports Organisation
ESRO	European Space Research Organisation
ESSP	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>
ESTB	EGNOS System Test Bed (estb@esa.int)
ESTEC	ESA Technical Centre (Navigation Lab at Noordwijk, Netherlands)
ESTMP	European Space Technology Master Plan
ESV	earth station (located on a) vessel (for maritime comms) EGNOS signal-in-space validation
ESVS	EGNOS Service Volume Simulator
ETA	estimated time of arrival
ETACS	Extended Total Access Communication System (cellphone standard)
ETC	electronic toll collection (a form of EFC)
ETCS	European Train Control System (part of ERTMS) <i>Internationally Interoperable signalling and safety system. 3 funtional levels.</i>
ETD	estimated time of departure

ETE	estimated time en route
eTEN	Electronic Trans-European (Transport) Networks (EU programme)
ETF	European Transport Workers' Federation
ETG	European Tripartite Group <i>Was a cooperation between EC, ESA and EUROCONTROL to develop EGNOS and perform preliminary work on GNSS-2.</i>
ETML	European Traffic Management Layer (part of ERTMS)
ETOPS	extended-range twin-engine operations
ETRF	European Terrestrial Reference Frame <i>Almost identical to WGS-84, but accommodates European continental drift.</i>
ETRO	estimated time to return of operations (eg of GPS satellite)
ETRS89	European Terrestrial Reference System 1989
ETS	European Telecommunications Standard
ETSI	European Telecommunications Standards Institute
ETV	emergency towing vessel
EU	European Union (25 states) <i>Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Irish Republic, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden & UK.</i>
EUFRANET	European Freight Railway Network (EU)
EUGIN	European Group of Institutes of Navigation <i>Institutes (2004): Austria, France, Germany, Italy, Netherlands, Nordic, Poland, Portugal, Spain, Sweden, Switzerland, UK.</i>
Eumetsat	European Organisation for the Exploitation of Met Satellites <i>17 European member states, formed in 1986 to run op met satellites.</i>
EUR	European Region (of ICAO)
EURAN	European Radionavigation Systems and Services (DGON conf series)
EUREF	European Reference Frame (eg ED-50)
EUREKA	Coordinated EU R&D programme for collaboration between industries
Eureka 147	A standard for digital audio broadcasting
Eurely	Consortium bidding for Galileo concession <i>Alcatel, Finmeccanica & Vinci Concessions & Capgemini.</i>
EUROBALISE	<i>Use of magnetic transponders (balises) for comms between track and train. Part of ETCS.</i>
EUROCAE	European Organisation for Civil Aviation Electronics
EUROCONTROL	European Organisation for the Safety of Air Navigation <i>36 member states + EC in 2006. HQ Brussels, UACC Maastricht, Experimental Centre Brétigny-sur-Orge, Inst of Air Navigaion Services, Luxembourg.</i>

Eurofix	<i>Datalink system whereby GNSS differential and integrity data is transmitted by LORAN-C and Chayka. Transmitted by 4 NELS sites in 2004.</i>
EuroGeographics	<i>Represents 46 organisations from 41 countries of European National Mapping and Cadastral Agencies (NMCAs).</i>
EUROGI	European Umbrella Organisation for Geographic Information
EUROLOOP	semi-continuous transmission system for trains (part of ETCS)
Europrice	EC DG VII (TREN) project for deployment of road pricing in Europe <i>Linked to Intercept Project.</i>
EURORADIO	Based on GSM-R, will replace optical train signalling (part of ETCS)
EUROSCOPE	Efficient Urban Transport Ops Services Co-op of Port Cities in Eur <i>Development of ROMANSE and SCOPE.</i>
EUSC	European Union Satellite Centre (Torrejón de Ardoz, Spain)
EUT	equipment under test
EUTELSAT	European Telecommunications Satellite Organisation
EUTELTRACS	European Telecommunication and Tracking System
EUTM	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>
EUTP	European Transfer Point (for intermodal transport)(EU)
EVA	autonomous route guidance system from Robert Bosch
EVI	electronic vehicle identification (also EC DG TREN project)
EVIS	Electronic Vehicle Identification System (chip fitted to every car)
EVS	enhanced vision system
EVSC	External Vehicle Speed Control (MIRA project 1997-2001, now ISA)
EW	Electronic Warfare
EWAAS	End-State WAAS <i>Final stage of WAAS, capable of supporting navigation and CAT I precision approach.</i>
EWAN	EGNOS Wide Area Network
EWG	evil waveform generator
EXM	executive monitoring (GBAS processing)
f	Earth's flattening (typically 1/298) femto (SI unit multiplier of 10 ⁻¹⁵) frequency farad (capacitance)
F-band	NATO radar band 3-4 GHz = 10-7.5 cm
F	°Fahrenheit
FA	fix to an altitude
FAA	Federal Aviation Administration (US) Fleet Air Arm (RN)

FAB	fast adaptable bandwidth (of loop filter for tracking GPS signals)
FADEC	full-authority digital engine control
FAF	final approach fix
FAI	Fédération Aéronautique Internationale <i>Body for verification of aeronautical record attempts and sporting activities.</i>
failure	<i>The unintended termination of the ability of a system, or part of a system, to perform its required function.</i>
failure rate	<i>The average number of failures of a system, or part of a system, per unit time.</i>
FANG	Flight Management System Air Traffic Management Next Generation
FANS	Future Air Navigation System (ICAO) <i>FANS 1 is Boeing implementation. FANS A Airbus 330/340; FANS B Airbus 320.</i>
FANS-1/A	air-to-ground datalink (ICAO)
FAR	Federal Air Regulation (US)
FASS	FAst Ship Safety (EU Framework project)
FAST	Final Approach Sequencing Tool (for air traffic)(US)
FASTEST	<i>Facilitating Smart Card Technology for Electronic Ticketing & Seamless Travel</i>
FAT	factory acceptance check final approach track
FATDMA	fixed allocation time division multiple access
FAU	fast acquisition unit (rx)
FAWP	final approach waypoint
FBG	fibre Bragg grating (type of accelerometer for solid-state IMU)
FBW	fly-by-wire
FC	funnel cloud (met)
FCC	Federal Communications Commission (US) flight control computer fully cellular containership
FCD	floating car data (from 'probe' vehicles that can create mapping data)
FCL	flight crew licensing
FCO	financed, constructed and operated
FCS	Federation of Communications Services (UK)
Fcst	forecast
FD	failure detection (algorithm) flight director
FDA	flight data analysis <i>Use of FDR data to monitor quality of operations.</i>
FDAU	flight data acquisition unit

FDDI	fibre distributed data interface
FDE	fault (failure) detection and exclusion
FDI	fault/failure detection and isolation
FDM	flight data monitoring (FOQA in US) <i>The use of an electronic flight data recorder to routinely monitor crew performance (not just when an incident occurs). Will be mandatory in Europe (>27,000 kg) by end 2004; is voluntary in US.</i>
FDMA	frequency division multiple access
FDP	Flight Dynamics Facility (Galileo)
FDPS	flight data processing system
FDR	flight data recorder
FEC	forward error correction
FEI	Federation of Electronics Industries (UK) <i>Changed name to 'INTELLECT' in 2002.</i>
FEM	finite element mesh
Fengyun	(also FY) Chinese metsats (means 'wind and cloud')
FERNS	Far East RadioNavigation System <i>LORAN-C and Chayka system similar to NELS.</i>
FET	field effect transistor
FEW	few clouds (1-2 oktas)
FF	fault free
FFL	fixed and flashing light
FFM	far field monitor
FFSK	fast frequency-shift keying
FFT	Fast Fourier Transform
FG	fog (met)
FGDC	Federal Geographic Data Committee (US)
FGMU	Frequency Generation and Modulation Unit (Galileo)
FHA	functional hazard assessment/analysis
FHWA	Federal Highway Administration (US)
FIB	flying inflatable boat (a RIB under a microlight wing)
FIBE	Fully Internet Based ESTB
FIC	Flight Information Centre
FID	Field Identifying Number (for farming, created in UK in 1995)
FIG	Fédération Internationale des Géomètres <i>International Federation of Surveyors.</i>
FIR	Flight Information Region
Firewire	Computer connection at up to 400 Mbps (IEEE-1394)
FIS	Field Identification System (of farming maps) Flight Information Service (ATC)

FISG	Fishing Industry Safety Group
FISO	Flight Information Service Officer
fix	<i>A position established by processing information from a number of navigation observations. Determined without reference to any other former position.</i>
fix interval	<i>Maximum time between fixes.</i>
fix rate	<i>The number of fixes per unit time.</i>
FIX_8	<i>Decimetre-level positioning project using a stand-alone GNSS rx using only free-to-air signals (GJU).</i>
FKP	Flächen Korrektur Parameter (in RTK to calculate area corrections)
FL	flight level <i>Altitude expressed in hundreds of ft, with ISA pressure setting of 1013.2mb set on altimeter.</i>
FLAS	Flight Level Allocation Scheme
FLIP	Flight Information Publication
FLIR	forward-looking infrared
FLL	frequency-locked loop
FLPFM	foot-launched powered flying machine
flt	flight
FM	faulty mode flight model frequency modulation from (met)
FMC	flight management computer
FMCS	flight management computer system
FMEA	failure modes and effects analysis
FMECA	failure mode, effects and criticality analysis
FMES	failure modes and effects summary
FMG	Frequency Management Group (ICAO)
FMGS	flight management and guidance system
FMOD	fuzzy model
FMS	fleet management system flight management system
FMSP	flight mode selector panel
FNPT	flight and navigation procedure trainer
FO	fibre optic fuel oil
FOC	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>
FOD	foreign object debris/damage
FODCOMS	Flight Operations Department Communications (CAA SRG)
FOG	fibre-optic gyro (introduced ~ 1985)
FOM	figure of merit flying operations manual
FONA	Flag Office Naval Aviation
FOP	Final Operational Phase (of GAGAN - 1 year after IEP)
FOQA	Flight Operations Quality Assurance (US - FDM in Europe)
FORS	fibre-optic rate sensor
FP	Framework Programme (EU) <i>6th FP (FP6) 2002-06.</i>
FPA	Flight Procedures Analysis (EGNOS)
FPD	flat panel display
FPGA	field-programmable gate array
FPM	flicker phase modulation
FPS	flight progress strip (ATC)
FPU	floating point unit (maths co-processor to speed up arithmetic tasks)
FQIS	fuel quantity indicator system (air)
FRA	Federal Railroad Administration (US)
FRAME	EC project to encourage implementation of Euro ITS Framework
Framework Directive	<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>
FRC	fast rescue craft flight reference card (check-list)
FREER	Free Route Experim'tal Encounter Resolution (EUROCONTROL Prog) <i>FREER-3 (1999) investigating delegation of ATC to a'craft via VDL-4.</i>
FRIN	Fellow of the Royal Institute of Navigation
FRP	Federal Radionavigation Plan (US) <i>Usually produced each even year.</i>
FRPA	fixed radiation/reception pattern antenna
FRPA-GP	FRPA ground plane
FRS	Federal Radionavigation Systems (US)
FRUIT	false replies uncorrelated in time (SSR garbling problem)
FS	fixed service (transmitter) (ITU)
Fs	fractostratus cloud

FSA	Formal Safety Assessment (shipping)
FSD	full-scale development
FSDPS	flight service data processing system
FSF	Flight Safety Foundation (US)
FSK	frequency-shift keying
FSS	fixed satellite services
	frequency-selective surface (for rf selection in nav/com systems)
FST	fuzzy set theory
FTA	fault tree analysis
	Federal Transit Administration (US)
	Freight Transport Association (UK)
FTD	flight training device
FTE	flight technical error
FTK	freight tonne kilometres (measures civil air actual freight traffic)
FTL	Flight Time Limitations (for aircrew - CAP 371 & EU OPS define)
FTP	File Transfer Protocol (Internet)
FU	smoke (met)
FUA	flexible use of airspace
FVD	floating vehicle data (from road vehicle gathering info)
FY	Fengyun metsat system (China)
FZ	freezing (met)
G	qiga (SI unit multiplier of 10^9)
G-band	NATO radar band 4-6 GHz = 7.5-5 cm
G-STAR	GPS Spacial Temporal Anti-jam Receiver
G/S	groundspeed
G1, G2	GLONASS carrier frequencies/bands <i>Frequencies (MHz) are 1,591-1,610 (G1) and 1,240-1,256 (G2).</i>
GA	general aviation <i>Executive and company aircraft; private and flying club aircraft; gliders, sport aviation and airships/balloons; aerial work.</i>
	ground antenna
GAAC	General Aviation Awareness Council (UK)
GaAs	gallium arsenide
GACC	General Aviation Consultative Committee (CAA)
GACF	Ground Assets Control Facility (Galileo)
GAD	General Aviation Department (CAA SRG)
GADEROS	Galileo Demonstrator for Railway Operation System (ERTMS)
GAFLEX	Galileo Flight Experiment (Germany-Russia industrial team) <i>Trial of Galileo signal structure on a GLONASS-M in late 2002.</i>
GAGAN	GPS and GEO Augmented Navigation (Indian WAAS)

GAGE	GPS at Geostationary Transfer Orbit Experiment <i>NASA/GPS JPO/DERA project using UK STRV (Oct 2000?).</i>
GAIN	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>
GAINR	GPS-Aided Inertial Navigation Reference System
GALA	GALileo overall Architecture definition (Nov 99 - Dec 00)
GALEWAT	Galileo & EGNOS for Waterway Transport (part of RIS)
GALILEAN	Galileo Application Network (EC) <i>To foster the competitiveness of European manufacturers and service providers.</i>
Galilei	EC study on interoperability of Galileo with other nav/comms
Galileo	European GNSS (GNSS-2)(Proposed by EU on 10 Feb 99)
GalileoSat	ESA definition study contract (Nov 99 - Dec 00)
GALLANT	EC project to integrate GNSS for road safety and mobility
GAMA	General Aviation Manufacturers Association (US)
GAMMA	Project to produce an assisted L1 Galileo/GPS/EGNOS rx (GJU)
GAMTA	General Aviation Manufacturers and Traders Association (UK)
GAN	global area network (the ultimate wide area network)
GAO	General Accounting Office (US)
GAP	Ground Accident Prevention (FSF initiative)
GAPAN	Guild of Air Pilots and Air Navigators
GARDA	Project to develop GPS/Galileo rx (GJU)
GARNET	Galileo Applications and Research Network (EC NoE)
GAS	Government Access Service (of Galileo)
GASCo	General Aviation Safety Council (UK)
GASG	General Aviation Steering Group (CAA)
GASIL	General Aviation Safety Information Leaflet (CAA)
GASP	General Aviation Safety Plan
GASRWG	General Aviation Safety Review Working Group (CAA)
GAST	Galileo Architecture Support Team (Dec 99 - Apr 01)
GAT	general air traffic
GATCA	ATCOs' union in Greece
GATCO	Guild of Air Traffic Control Officers (UK)
GATE	Galileo Test and Development Environment (Germany) <i>GATE - The</i>
GATM	Global Air Traffic Management (USAF programme)

GATS	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>
GAUA	Galileo adaptive user algorithm
GAUSS	Global AUgmentation for Satellite Systems <i>Concept of integratd navigation using core satellite-based and augmentation systems eg NELS.</i>
Gb	gigabyte (= 1,024 megabytes)
GB	gyro bearing (angular distance from GN to the object)
GBAS	Ground-Based Augmentation System
GBAS-B	Ground-Based Augmentation System Broadcast
GBCN	ground-based communications network
GBEN	ground-based external navigation (system)
GC	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>
GCA	ground-controlled approach
GCC	Galileo Control Centre
GCI	ground-controlled interception
GCS	Ground Control Segment (Galileo)
GDA	GEBCO Digital Atlas
GDF	Geographic Data File <i>The European standard used to describe and transfer road networks and road-related data for the mapping industry.</i>
GDOP	geometric dilution of precision <i>The factor by which the accuracy of a 3-D fix and time are degraded by geometrical considerations.</i>
GE	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>
GEBCO	General Bathymetric Chart of the Ocean (IHO project)
GEC	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>

GEMINUS	Galileo European Multimodal Integrated Navigation User System <i>EC study to define Galileo services. Consortium led by Racal. Nov 99 - Dec 00.</i>
GEMS	GPS Environment Monitoring System (spectrum analyser for GPS)
GENESIS	Galileo Euro Network of Experts to Support the Euro CommIssion <i>Nov 99 - Nov 03.</i>
GEO	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>
Geocentric lat	<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>
Geocentric lon	<i>Angle between the plane of the geocentric prime meridian and the plane of a point's geocentric meridian.</i>
Geodesy	<i>Science concerned with surveying and mapping the earth's surface to determine, e.g., its exact size, shape and gravitational field.</i>
Geodetic accuracy	<i>The accuracy of a position with respect to the geodetic coordinates of the earth (IMO).</i>
Geodetic datum	<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>
Geodetic lat	<i>Angular distance between the plane of the geodetic equator and the normal to a point on the earth ellipsoid.</i>
Geodetic lon	<i>Angular distance between the plane of the geodetic prime meridian and the plane of a point's geodetic meridian.</i>
Geographic accuracy	<i>The accuracy of a position with respect to the geographic coordinates of the earth (IMO).</i>
GEOLUT	GEostationary Orbit Local User Terminal
GES	ground earth station
GFE	government-furnished equipment
GGC	Galileo Global Component
GGTO	GPS-Galileo Time Offset
GH	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>
GHA	Greenwich Hour Angle
GHz	gigahertz (1,000,000,000 cycles per second)
GIA	GBAS Interoperability Analysis (EGNOS)
GIAC	GPS Interagency Advisory Council (US)

GIANT	Geodetic Infrastructure for Antarctica GNSS Introduction in the Aviation Sector (EC proj from Jul 05) GPS Interference and Navigation Tool (US)
GIC	GNSS/Ground Integrity Channel
GIF	Graphics Interchange Format (used on Web)
GIFTSS	Government Information from the Space Sector (UK BNSC)
GIM	global ionosphere map (from IGS)
GIMOS	GNSS Interference Monitoring System
GINs	global inertial navigation system (GPS and inertial)
GIOVE	Galileo In-Orbit Validation Element (GSTBV2A/B)
GIP	Government Industry Partnership (US) (=PPP)
GIPA	Galileo Integrity Performance Assessment
GIR	groundwave-to-interference ratio
GIRASOLE	SoL GPS/EGNOS/Galileo 24 ch rx for air, maritime and rail (GJU)
GIS	geographic information system
GISIC	Geographical Information Systems International Group
GISM	GPS Scintillation Model/Monitor
GISPE	Geographic Information Service Providers in Europe
GISS	Galileo Interim (management) Support Structure
GITA	GPS Interference Testing Approval
GIVD	grid ionospheric vertical delay (eg in WAAS)
GIVE	Geographical Information Vendors Europe grid ionospheric vertical error (eg in WAAS)
GIWA	Global International Waters Assessment
GIWG	GPS International Working Group (US, State Dept chair)
GJU	Galileo Joint Undertaking (to become GSA)
GL	Germanischer Lloyd (classification society)
GLA	General Lighthouse Authority (CIL, NLB, TH)
GLAN	geographic longitude of the ascending node (of a satellite orbit) <i>Equatorial angle from the prime meridian to the ascending node.</i>
GLESOC	Generic Local Element Service and Operating Centre (GNSS)
GLF	General Lighthouse Fund <i>Meets the costs of the GLAs. Derives income mainly from light dues charged on commercial shipping calling at UK & Rep of Ireland ports.</i>
GLONASS	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 2006.</i>

GLONASS-K	Third generation GLONASS system <i>Satellites are smaller and lighter with 10-year operational life. 2005-22.</i>
GLONASS-KM	Fourth generation GLONASS system <i>Requirement generated in 2002 for deployment 2015-35.</i>
GLONASS-M	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>
GLORIA	GNSS & Loran-C in Road & Rail Applications (EC)
GLOSS	Global Sea Level Observing System <i>Research programme coordinated by the IOC.</i>
GLRT	generalised likelihood ratio test
GLS	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>
GM	Gauss-Markov (form of Kalman filter)
GMC	ground movement controller (ATC)
GMDSS	Global Maritime Distress & Safety System (see Sea Areas)
GMES	Global Monitoring for the Environment and Security (EU/ESA)
GML	Geo Markup Language
GMS	Ground Mission Segment (Galileo) Ground Monitor Station (MSAS)
GMSK	gaussian minimum shift keying <i>Typically allows 8 kbps to be transmitted over a 12.5 kHz channel.</i>
GMSP	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>
GMT	Greenwich Mean Time <i>May be regarded as the general equivalent of UT1.</i>
GMU	GPS-based monitoring unit <i>US system for checking aircraft navigation performance.</i>
GN	grid north <i>Northerly direction indicated by the gyro-compass 000° index.</i>
gnd	ground
GNE	gross navigational error
GNS	Ground Network System (US ATC)

GNSS	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>
GNSS/CN	Global Navigation Satellite System/Cellular Network
GNSS/GSM	Global Navigation Satellite System/Global System for Mobile Comms
GNSSP	Global Navigation Satellite Systems Panel (ICAO)
GO	geometrical optics
GOC	Galileo Operating Company (concessionaire) General Operator's Certificate (GMDSS)
GOCE	Gravity Filed and Steady State Ocean Circulation Explorer (ESA)
GOERS	GPS Outage En Route Simulation (FAA experiment 2002)
Goes	Geostationary Operational Environmental Satellite <i>Geos-M carries the SXI.</i>
Gold Code	Unique pseudo-random code used by each GPS satellite
GOTS	GPS Outage Terminal Simulation (FAA experiment 2003)
GOV	GNSS-1 Operational Validation (EUROCONTROL)
GP	general purpose glidepath
GP&C	global position & communication
GPAT	Generic Performance Analysis and Trending (EGNOS)
GPIP	glidepath intercept point (of landing aircraft)
GPMS	GPS Performance Monitoring System (UK NATS)
GPO	GPS (Joint) Program Office (US)
GPRS	General Packet Radio Service (GSM-based protocol; '2.5G') <i>Mobile phone protocol from 2000 using packet switching at 171.2 kbps.</i>
GPS	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>
GPS III	Next generation GPS (first launch 2013?)
GPS Time	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>
GPS Week	Modulo 1,024 number of elapsed GPS weeks <i>Began 6 Jan 80 with first roll-over on 22 Aug 99.</i>
GPS-CV	GPS Common View (mode of operating for time transfer)
GPS/GSM	Global Positioning System/Global System for Mobile Communication
GPTS	Global Positioning and Timing Service

GPWS	Ground Proximity Warning System
GR	hail >5 mm (met)
GRACE	Generalised Rules for Advanced Constellation Evaluation Gravity Recovery and Climate Experiment (NASA)
GRADU	gradual (met reports)
GRAIL	Galileo introduction in the RAIL sector
GRAM	GPS receiver application module
GRAPE	GPS Routine for Attitude Parameter Estimation <i>Software package for processing GPS signals.</i>
GRAS	GPS Receiver for Atmospheric Sounding Ground-based Regional Augmentation System (GPS)(Australia,
GRI	Group Repetition Interval (LORAN-C) <i>Integer in range 4,000 to 9,999. Time interval between pulse groups in 10s of microseconds.</i>
GRINGO	GPS RINEX Generator (IESSG)
GRM	GPS receiver module
gross error	<i>Or 'outlier' is error other than random or systematic error. Often large and, by definition, unpredictable (After IMO).</i>
GRP	glass reinforced plastic
GRR	ground reference receiver
GRT	gross registered tonnage
GS	glideslope
GSA	GNSS Supervisory Authority (to take over from GJU)
GSB	Galileo Security Board
GSC	Galileo Security Committee
GSDI	Global Spatial Data Infrastructure
GSE	ground support equipment
GSI	Geographical Survey Institute (Japan)
GSM	Groupe Speciale Mobile or Global System for Mobile <i>Digital mobile phone structure also allowing 160-character alpha-numeric messages (SMS). Uses narrow-band TDMA giving 8 slots per frequency at 9.6 kbps.</i>
GSM-R	GSM-Railway (part of ERTMS) <i>Secure voice/data comms between drivers & signallers (UK in 2013?).</i>
GSO	geo-synchronous orbit
GSOS	GPS Surface Observing System (US)
GPS	Global System Performance Specifications (ICAO)
GSS	Galileo Sensor Station geospatial server (central server for real-time traffic guidance)
GSSB	Galileo System Security Board

GSSF	Galileo System Simulation Facility (ESA)
GST	Galileo System Time (spec within 50 ns 95%) Greenwich Siderial Time
GSTARS	Ground Safety Tracking and Reporting System (for airfields)
GSTB	Galileo System Test Bed
GSTBV2A	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>
GSTBV2B	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>
GSVF	Galileo Signal Validation Facility
GSVF	Galileo Signal Validation Facility (ESA)
GT	gross tonnage/tons ground track (intended path of ship's movement over ground)
GTP	Global Telematics Protocol GPS translator processor (of TGRS)
GTR	Group Time Reference (LORAN-C)
GTRF	Galileo Terrestrial Reference Frame (based on ITRF96)
GTRS	Galileo Terrestrial Reference System
GTS	Global Telecommunications System
GTSP	Galileo Time Service Provider
GUI	graphical user interface
GUST	Galileo User Support Transport <i>EC project for Galileo receivers.</i>
GWGGTI	GalileoSat WG on the Galileo Time Interface
GWS	GPS wavefront simulator
h	hecto (SI unit multiplier of 10^2)
H	henry (inductance in Wb/A)
H-band	NATO radar band 6-8 GHz = 5-3.75 cm
H-field	magnetic-field (eg of aerial)
H24	continuous round-the-clock operation
HA	harbour authority Highways Agency (established by UK Government in 1994)
HA-NDGPS	High Accuracy Nationwide DGPS (US)
HA-NDGPS	High Accuracy Nationwide Differential GPS (US)
HAGR	high-gain GPS receiver
HAL	horizontal alert limit/level (eg for WAAS precision approach etc)
HALE	high altitude long endurance (vehicle such as balloon or airship)

HAP	high altitude platform (stratospheric GNSS augmentation platform) <i>eg Helios UAV at 20 km altitude.</i>
HAT	height above terrain
HAZMAT	hazardous material
HBL	hydrostatic balanced loading
HCAA	Hellenic Civil Aviation Authority
HCMM	The Honourable Company of Master Mariners
HCRF	hydrographic chart raster format
HCS	heading control system
HD	head direction (used in animal navigation)
HDC	Hydrographic Data Centre (UK)
HDD	head-down display
HDG	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>
HDLC	high-level data link control/communication
HDOP	horizontal dilution of precision <i>The factor by which a two-dimensional fix in a horizontal plane is degraded by geometrical considerations.</i>
HEA	harbour entrance and approach
HEAP	Human Element Analysing Process (IMO)
HELCOM	Helsinki Commission (Baltic Marine Environment Protection Comm) <i>To protect marine environment. Denmark, Estonia, EU, Finland, Germany, Latvia, Lithuania, Poland, Russia & Sweden.</i>
HeliNet	Proposed network of unmanned solar-powered stratospheric <i>Project funded by EC Fifth Framework for environmental surveillance, broadband services and positioning.</i>
HEO	highly-elliptical orbit (typically 1,500-40,000 km)
HEROE	Harmonisation of European Rail Rules for Operating ERTMS (EU)
HEX	Horizontal Expansion (programme - eg coverage of 8.33 kHz)
HF	high frequency (3-30 MHz) (decametric waves) human factors
HFDL	high frequency datalink
HFM	Human Factors and Medicine Panel (NATO RTO)
Hg	Refers to inches of mercury for atmospheric pressure <i>ISA 1013.2 mB or hPa = 29.92 ins Hg.</i>
HGA	high gain antenna
HGE	Harmonisation Group on ECDIS
HGMIO	Harmonisation Group on Marine Information Objects (IHO-IEC)
HGS	head-up guidance system

HGV	heavy goods vehicle
HHP	high holding power (anchors)
HI	High Integrity (Galileo service)
HIAL	high intensity approach lighting
HIDSS	helmet integrated display sighting system (for aircrew)
HIPS	Highly-Interactive Problem Solver (EUROCONTROL) <i>Software for real-time air traffic management.</i>
HIRF	high intensity radio frequency
HIRL	high intensity runway lighting
HIRLAM	High Resolution Limited Area Model (to estimate tropospheric delay)
HISL	high-intensity strobe light
HITL	hardware-in-the-loop
HL	heading line (radar)
HLD	high level definition (document)
HLG	High Level Group
HLS	helicopter landing site
HMAC	Hazardous Materials Advisory Council
HMD	helmet-mounted display
HMI	hazardously misleading information human-machine interface/interaction
HMLR	Her Majesty's Land Registry (UK)
HMR	helicopter main route
Hmr	homer
HMU	health monitoring unit height-monitoring unit <i>Ground-based unit for very accurately checking on aircraft height.</i>
HNS	Hazardous and Noxious Substances (IMO Protocol)
HNSE	horizontal navigation system error
HO	height observed hydrographic office
HOB	Hydrographic Office Board (UK)
HoE	height of eye
HOL	high order language
HOMER	homing marine environmental recorder
Hon FRIN	Honorary Fellow of the Royal Institute of Navigation
HOTAS	hands on throttle and stick (ergonomic cockpit technology)
HOW	hand-over word
HP	High Precision (GLONASS military service) high pressure

	holding point
hPa	hectopascal <i>Supersedes the millibar. 1mB = 100 pascals = 1 hPa.</i>
HPA	high power amplifier
HPL	horizontal protection limit
HPZ	helicopter protected zone
hr	hour
HRA	human reliability analysis
HRG	Hemispherical Resonator Gyro (vibratory gyro for IMU - N Grumman)
HRS	height reference surface
HRU	hydrostatic release unit
HSA	Health and Safety Executive (UK)
HSB	hue, saturation, brightness (system of specifying display colours)
HSC	high speed craft
HSC Code	International Code of Safety for High Speed Craft (IMO)
HSE	Health and Safety Executive (UK) health, safety and environmental
HSGPS	high sensitivity GPS
HSI	horizontal situation indicator
HSWA	Health and Safety at Work Act (UK)
HTML	HyperText Mark-up Language (for Web pages)
HTTP	HyperText Transfer Protocol
HTZ	helicopter traffic zone
HUD	head-up display
HUNE	horizontal component of the user navigation error
HUNGAGI	Hungarian Association for Geo-information
HV	host vehicle
HW	hardware high water
HX	holding to fix
HZ	haze (met)
Hz	Hertz (cycles per second)
HZA	high zenith antenna (eg GPS for elevation >35°)
I	in-phase component
I-3, I-4	Inmarsat 3rd or 4th generation satellites <i>I-4s in at 54°W (Atlantic W) and 64°E (Indian Ocean) in 2006 with 3rd as spare on ground. Carry navigation package, 200 spot beams and comms up to 432 kbps.</i>
I-band	NATO radar band 8-10 GHz = 3.75-3 cm
I-Level	intermediate level

I-NMF	Integrity Network Management Facility (Galileo)
I&D	integrate and dump (correlator function in satnav rx)
I²S	integrated information system
IAA	International Academy of Astronautics
IACA	International Air Carriers Association (of non-scheduled airlines)
IACS	International Association of Classification Societies (London)
IADC	International Association of Dredging Companies
IAEA	International Atomic Energy Agency
IAF	International Astronautical Federation <i>Founded in 1951, now has 165 non-governmental corporate members from 44 states (2003). Based in Paris.</i>
IAG	International Association of Geodesy
IAIN	International Association of Institutes of Navigation <i>Institutes (2006): Australia, Austria, China, Czech Republic, DPR Korea, Egypt, France, Germany, Italy, Japan, Korea, Netherlands, Nordic, Poland, Portugal, Russia, Spain, Switzerland, UK, US.</i>
IALA	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 & Irish Lights. Formed 1957. Full title 'International Association of Marine Aids to Navigation and Lighthouse Authorities'. AISM in French.</i>
IAMF	International Aeronautical Monetary Fund (ICAO) <i>Proposal to pay for the implementation of CNS/ATM in poorer countries.</i>
IAN	Instituto Argentino de Navegacion
IAOPA	International Aircraft Owners and Pilots Association (55 states 01)
IAP	instrument approach procedure
IAPH	International Association of Ports and Harbours
IAPSO	International Association for the Physical Sciences of the Ocean
IAS	indicated airspeed
IASA	International Aviation Safety Assessment (FAA programme)
IASC	International Arctic Science Committee
IASST	International Association for Safety and Survival Training
IATA	International Air Transport Association <i>Based in Montreal. Founded in 1947. Represents 265 airlines comprising 94% of international scheduled air traffic. Website: http://www.iata.org</i>
IAWP	initial approach waypoint
IBAN	Internet-Based Augmentation System (a WAAS using www)
IBC	International Bathymetric Chart

IBC Code	International Bulk Carriers' Code <i>Includes equipment in ships carrying dangerous chemicals in bulk.</i>
IBCS	integrated bridge control system
IBCU	inboard computer unit
IBIS	intelligent bus for inertial sensor
IBIT	initiated built-in test
IBLS	Integrity Beacon Landing System (using pseudolite)
IBn	identification beacon
IBS	integrated bridge system
IC	ice crystals (met) interrogator code (SSR Mode S)
ICA	International Cartographic Association
ICAA	Iceland Civil Aviation Administration
ICAM	Integrated Coastal Area Management
ICAO	International Civil Aviation Organisation (188 nations in 2003)
ICAO (EUR/NAT)	ICAO (European & North Atlantic Region)(ECAC + 11 = 49 states)
ICB	industrial consultation body
ICC	integrated control system integrity control centre (Galileo) International Cartographic Conference (ICA) International Certificate of Competence International Chamber of Commerce
ICCL	International Council of Cruise Lines
ICCS	Integrated Coastguard Communications System
ICD	interface control document
ICES	International Council for the Exploration of the Sea
ICF	initial contact frequency (ATC) Integrity Control Facility (Galileo)
ICHCA	International Cargo Handling Co-ordination Association
ICNS	integrated communication, navigation and surveillance
ICOMIA	International Council of Marine Industry Associations
ICS	initial control system Institute of Chartered Shipbrokers International Chamber of Shipping (London-based) International Code of Signals International Commission on Shipping
ICT	information and communication technologies
ICZM	Integrated Coastal Zone Management (UK)
ICZMap	Integrated Coastal Zone Mapping (UK OS project 2004-06)

ID	identification
IDDN	Integrity Data Dissemination Network (Galileo)
IDM	improved data modem
IDP	information data processing
IDS	integrated display system integrity determination system
IEC	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, 5000 international stds published.</i>
IEE	Institute of Electrical Engineers (UK)
IEEE	Institute of Electrical and Electronic Engineers (US)
IEG	Information Exchange Group (CIL, THLS and NLB)
IEP	Initial Experimental Phase (of GAGAN - 1 year after TDS)
IERS	International Earth Rotation Service
IES	inverted echo sounder
IESSG	Institute of Engineering Surveying and Space Geodesy <i>At the University of Nottingham.</i>
IETT	Institute of European Trade and Technology
IF	inertial frame initial fix instrument flying integrity flag (GNSS) intermediate frequency
IFALPA	International Federation of Airline Pilots' Associations
IFATCA	International Federation of Air Traffic Controllers' Associations <i>Represents ~ 40,000 air traffic controllers in >100 countries.</i>
IFCS	integrated flight control system
IfEN	Institute of Geodesy and Navigation (Univ FAF Munich, Germany)
IFF	Identification Friend or Foe (system)
IFFAS	International Financial Facility for Aviation Safety
IFN	Institut Français de Navigation
IFO	intermediate fuel oil
IFOG	interferometric fibre-optic gyro
IFR	instrument flight rules
IFSMA	International Federation of Shipmasters' Associations (London)
IFTA	instrument flying training area
IGA	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>

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

IMCA	International Marine Contractors Association
IMDG Code	International Maritime Dangerous Goods Code (IMO)
IMEC	International Maritime Employers' Committee
IMERP	Implementation of the European Radionavigation Policy
IMLA	integrated multipath-limiting antenna International Maritime Lecturers Association
IMO	International Maritime Organisation <i>A UN body formed in 1959 and based in London. 164 members (2004).</i>
IMPA	International Maritime Pilots' Association
IMPACT	ATCOs' union in Ireland
IMS	Incident Management System integrity monitor station (eg Galileo)
IMSO	International Mobile Satellite Organisation <i>An intergovernmental body to oversee Inmarsat's delivery of its public service obligations, including GMDSS.</i>
IMT 2000	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>
IMTA	International Map Trade Association
IMU	inertial measurement unit
IN-RAR	interferometric real aperture radar
IN-SAR	interferometric symthetic aperture radar
INA	International Navigation Association
iNavSat	Consortium bidding for Galileo concession <i>EADS Space, Inmarsat & Thales.</i>
INCOSE	International Council on Systems Engineering
INE	Instituto de Navegacion de Espana
INITIATIVE	EU Project for electronic fee collection using GNSS
INLS-Code	International Noxious Liquid Substances Code
Inmarsat	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>
INPHORMM	Info & Pub Helping the Objective of Reducing Motorised Mobility
INS	inertial navigation system integrated navigation system
INSPIRE	Infrastructure for Spacial Information in the EU <i>A database with consistent geographical data to improve mapping in Europe.</i>

INTEG	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>
integrated navigation system	<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>
integrity	<i>The ability to provide users with warnings within a specified time when the system should not be used for navigation (IMO).</i>
integrity risk	<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 10^{-7}.</i>
INTELFRET	intelligent freight train
INTELLECT	New name (2002) for FEI - Electronic Industry Trade Organisation
INTER	intermittent or fluctuating (met)
Intercargo	International Association of Dry Cargo Shipowners
Intercept	Intermodal Concepts in European Passenger Transport <i>EC DG TREN & DG XIII project.</i>
Interdecadal	Between ten years or in groups of ten
International NAVTEX	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>
interoperability	<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>
Intertanko	International Association of Independent Tanker Owners
INWAAS	Indian WAAS
IOC	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
IOD	issue of data
IODC	issue of data, clock (GPS)
IODE	issue of data, ephemeris (GPS)
IOG	integrated optics gyro (technology beyond MEMS)
IOLT	Institute of Logistics and Transport
IOM	input/output module
ION	Institute of Navigation (US)
ION-CH	Swiss Institute of Navigation
Ionosphere	Part of atmosphere from ~ 120-350 km

IOP	Initial Operations Phase (EGNOS)
IOPC	International Oil Pollution Compensation Fund
IOR	Indian Ocean Region <i>Inmarsat III satellite at 64.5°E.</i>
IORS	integrated optical rotation sensor
IOT&E	Initial Operational Test & Evaluation
IOV	in-orbit validation
IP	initial point (eg fix before run-in to target) instrumentation port Integrated Project (EU FP6) interlectual property Internet Protocol
IPAB	International Programme for Antarctic Buoys
IPAX	in-plane accelerometer
IPC	Industrial Policy Committee (ESA)
IPF	Integrity Processing Facility (Galileo)
iPLOT	Intelligent Pervasive Location and Tracking (Leeds U)
IPP	ionospheric pierce point (for measuring ionospheric delay eg GPS)
IPPA	Innovative Portable Pilot Assistance (marine project)
IPPS	Intelligent Pedestrian Protection System (on cars)
IPR	intellectual property right
IPTS	International Port Traffic Signals
IPV	instrument approach with vertical guidance
IQ	in-phase quadrature
IR	Implementing Rule (EASA) impulse radio (UWB) infrared Instrument Rating
IRAC	Interdepartmental Radio Advisory Committee (US)
IRAC/SPS	IRAC Spectrum Planning Sub-committee (US)
IRAC/SSG	IRAC Space Systems Group (US)
IRB	indoor reference beacon
IRF	International Road Federation
IRI	International Reference Ionosphere
IRLOGI	Irish Organisation for Geographic Information
IRPCS	International Regulations for Preventing Collisions at Sea (1972) <i>Also known as COLREGs.</i>
IRS	inertial reference system
IRT	Independent Review Team (USAF)

IRU	inertial reference unit International Road Transport Union
IS	information system
ISA	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>
ISAF	International Sailing Federation
ISATA	International Symposium on Automotive Technology & Automation
ISDN	Integrated Services Digital Network
ISF	International Shipping Federation (London-based)
ISGOTT	International Safety Guide for Oil Tankers and Terminals
ISIS	integrated standby instrument system
ISL	inter-satellite link
ISM	International Safety Management (Code)(IMO) <i>Code for safe operation of ships and for pollution prevention.</i>
ISMA	International Ship Managers' Association
ISMASS	Ice Sheet Mass Balance and Sea Level
ISO	International Organisation for Standardisation (est 1946) <i>Members from 146 countries, 190 Tech Ctees, 15,000 international standards published.</i>
isochrone	Contour of equal travelling time from a point (for routeing software)
ISOL	isolated (met)
Isostatic	In hydrostatic equilibrium from equality of pressure
ISOTOPE	Improved Structure & Organisation for Trans Ops of Pax in Europe
ISP	Internet service provider
ISPRS	International Society of Photogrammetry and Remote Sensing
ISPS	International Ship and Port Security Code
ISS	integrated sensor suite
ISSA	International Ship Supplies Association
ISSN	international standard serial number
IST	Information Society Technologies (EC)
ISTB	International Satellite Test Bed (EU initiative)
ISU	International Salvage Union
ISWG	Intersessional Working Group (IMO)
IT	information technology
ITAS	Integrated Topographic Analysis System (to predict GPS Jamming)
ITF	International Transport (Workers) Federation
ITIS	Integrated Transport Information Services (travel inf for logistics)
ITM	Institute of Transport Management

ITN	Integrated Transport Network (data layer of OSMM)
ITOFAR	Interrogated Time Offset Frequency Agile Racon
ITRF	IERS Terrestrial Reference Frame (currently ITRF96)
ITS	intelligent transport(ation) system <i>The application of IT and comms to all surface transport modes.</i>
	intermediate level test set
ITSUK	Intelligent Transport Society for the UK (>130 members)
ITU	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>
ITWS	Integrated Terminal Weather System (gives ATC 20-min wx)(US)
ITZ	Inshore Traffic Zone
IUGG	International Union of Geodesy and Geophysics
IUGS	International Union of Geological Sciences
IULS	Integrity Uplink Station (Galileo)
IUSM	International Union for Surveys and Mapping
IVHS	intelligent vehicle highway system
IVI	Intelligent Vehicle Initiative (US)
IVIS	in-vehicle information system
IVS	in-vehicle system
IVSI	instantaneous vertical speed indicator (air)
IVU	in-vehicle unit
IWAAS	Initial WAAS <i>Capable of supporting navigation and CAT I precision approach but lacking internal redundancy and guaranteed availability.</i>
IWAN	internal wide area network
IWP	intermediate waypoint
IWV	integrated water vapour
J-band	NATO radar band 10-20 GHz = 3-1.5 cm
J/S	jamming-to-signal ratio
JAA	Joint Aviation Authorities (40 members in 2006)
JANE	Joint Air Navigation Experiments (EU)
JANSC	Joint Air Navigation Services Council (MOD/NATS)
JAR	Joint Aviation Requirement (of the JAA)
JAR-OPS	Joint Aviation Requirement Operations Manuals
JCAB	Japanese Civil Aviation Bureau
JCG	Joint Coordinating Group <i>Comprising chairmen & chief executives of the GLAs.</i>
JD	Julian Day (count of days from midday on 1 January 4713 BC)

JDRMA	Japan Digital Road Map Association
JERICH0	Impact of a Changing Wave Climate on our Coasts (BNSC project)
JGPSC	Japan GPS Council
JIN	Japan Institute of Navigation
JMC	Joint Maritime Commission (of ILO)
JMSA	Japan Maritime Safety Agency
JNRP	Joint Navigation Requirements Policy (GLAs)
JOI	Joint Operating Instruction
JOS	Joint Operation Schedule (EGNOS)
JPALS	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>
JPEG	Joint Photographic Expert Group <i>Standard for digital image compression.</i>
JPL	Joint Propulsion Laboratory (Pasadena CA, USA)
JPO	Joint Program Office (US)
JRC	Joint Research Centre (EC)
JRCC	joint rescue co-ordination centre
JRSC	joint rescue secondary centre
JSC	Joint Spectrum Centre (US)
JSR	jamming-to-signal ratio
JTIDS	Joint Tactical Information Distribution System (US/NATO DL) <i>Also known as NATO Link 16.</i>
JTSO	Joint Technical Standard Order (JAA)
JU	Joint Undertaking (Galileo management)
JUCG	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>
JWG	Joint Working Group (ICAO and IMO)
k	kilo (SI unit multiplier of 10^3)
K-band	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
K_a-band	Old radar band 27-40 GHz (ITU assigned 33.4-36.0 GHz) ~ 1 cm
Kalman Filtering	<i>Mathematical method of combining data to give optimal position (velocity etc) solutions whilst on the move.</i>
KAREN	European ITS framework architecture
kbit	kilobit <i>1,024 bits or 128 8-bit bytes.</i>
kbps	kilobits per second
KF	Kalman filter

kg	kilogram (1,000 grams)
kHz	kilohertz (1,000 cycles per second)
KIAS	knots indicated airspeed
KIN	Korean Institute of Navigation
KinPos	GPS/INS integration software package (Nottingham University, UK)
Klobuchar	model to calculate slant ionospheric delay (eg GPS)
km	kilometre (1,000 metres)
KMF	key management facility
kn	knot (unit of velocity and speed) <i>1 kn = 1 NM/h = 0.514444 m/s.</i>
KNAG	Royal Dutch Geographical Society
KPI	key performance indicator
KR	Korean Register of Shipping (classification society)
kt	knot
KTA	key technical advisor
KTN	Knowledge Transfer Network (eg Location and Timing)
K_u-band	Old radar band 12-18 GHz ~ 2 cm <i>(ITU assigned 13.4-14.0 & 15.7-17.7 GHz)</i>
kVA	kilo volt-amps
kW	kilowatt (1,000 watts = 1.341 horsepower)
L-band	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
L/L	latitude and longitude
L1, L2, L5	GPS carrier frequencies (in the old L-band) <i>Frequencies (MHz) are 1,575.42 (L1), 1,227.60 (L2) & 1,176.45 (L5).</i>
L2CCO	Level 2 Certificate in Coaching Orienteering
LAADR	Low-Altitude Arrival/Departure Route
LAAS	Local Area Augmentation System (GPS etc) <i>Operational date in USA 2004.</i>
LAC	Lights Advisory Committee (GLAs) location area code (phone network)
LAD	linear averaging digital (Loran technique from Locus Inc)
LADGNSS	Local Area Differential GNSS
LADGPS	Local Area Differential GPS
LAHSO	land and hold short operation (to expand runway capacity)
LAL	lateral alert limit/level (eg for WAAS precision approach etc) LBS Application Level
LAMBDA	least-squares ambiguity decorrelation adjustment
LAN	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>
LANBY	Large Automatic Navigation Buoy
LARS	Lower Airspace Radar Service
LAS	local area system lower airspace service
laser	light amplification by stimulated emission of radiation
LAST	Light Aviation SSR Transponder (Mode S proposed for UK fm Mar
Lat	(LAT) (φ) latitude (angular distance from equator, labelled N or S) <i>May be geographic, geodetic, geocentric or astronomical.</i>
LAT	local apparent time lowest astronomical tide
LATCC	London Area and Terminal Control Centre (ATC)
LATS	London Area Traffic Survey (UK DTLR)
LAVIA	Limiteur s'Adaptant à la Vitesse Autorisée (French EVSC)
LB	lighted buoy
LBA	Luftfahrt Bundesamt (German CAA)
LBMON	L-Band Monitor (computer program)
LBS	lifeboat station location-based service(s)
LBSP	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 2,000 km.</i>

LEOLUT	low earth orbit local user terminal
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	light detection and ranging
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
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 (luminous 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
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
LVN	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))
LOCOPROL	(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>
Locus	Pinpoint project on location context tools for 3G services <i>City University & The Geoinformation Group.</i>
LOGIC	Loran GNSS interoperability channel
LOIS	Land Ocean Interaction Study
Lon	(LON) (λ) 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>
LOP	line of position (also PL)
LOR	legal and organisational review (EC) Long-term Operations & Replenishment (phase of Galileo fm 2008)
LORAN	LONG Range Navigation <i>LORAN-C is a terrestrial pulsed hyperbolic system in band 90-110kHz.</i>
LOREG	Loran/Eurofix/EGNOS (Norwegian test and evaluation plan)
LORSTA	Loran station
LOS	line-of-sight

Loxodrome	rhumb line
LPV	Lateral Precision with Vertical Guidance (landing system) <i>Uses GPS/WAAS. Requires 40 m HAL and 50 m VAL protection.</i>
LR	long range
LRC	Long Range Certificate (for GMDSS MF/HF equipment)
LRIP	low rate initial production
LRIT	long range identification and tracking (of ships)
LRK	long-range kinematic (of GPS)
LRM	line-replaceable module
LRNS	long range navigation system
LROPS	long-range operations
LRP	LORAN-C Recapitalization Project (US - \$120 million)
LRU	line-replaceable unit
LRUC	Lorry Road User Charge (UK programme of HM Customs & Excise)
LS	leap seconds (=TAI - UTC; was +32s Nov 00) least square
LSB	least significant bit
LSF	leap seconds future
LSI	large scale integration (of chips)
LSR	least squares residual
LSU	Loran Support Unit (USCG)
LSVA	Swiss Heavy Vehicle Free Area
LT	local time
LTF	Legal Task Force (EUROCONTROL)
LTMA	London Terminal Manoeuvring Area (ATC)
LTP	LAAS Test Prototype (US) local transport plan
LUT	local user terminal (COSPAS-SARSAT)
LV	light vessel
LVTO	low visibility take-off
LW	low water
lx	lux (illuminance in lm/m^2)
μ	micro (SI unit multiplier of 10^{-6})
μ-FORS	micro-fibre-optic rate sensor
μ	Earth's gravitational constant (typically $3.99 \times 10^{-14} \text{m}^3/\text{s}^2$)
$\mu\text{V/m}$	microvolts per metre
m	metre milli (SI unit multiplier of 10^{-3})

M-ADS	Modified Automatic Dependent Surveillance <i>Mandatory for helicopters in Norwegian Sector of North Sea from Apr 99.</i>
M-band	NATO radar band > 60 GHz = < 5 mm
M-Code	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>
M-Notice	Merchant Shipping Notice (UK)
M-Spot	(Mspot/M Spot) Mil GPS technique of focussing sig to give higher
m/s	metres per second
M	Mach
	magnetic
	meqa (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>
M&C	monitor and control station
M&S	models and simulation
M&T	measurement & testing
MA	map aiding
MAC	medium access control
Mach No	(M) Ratio of TAS to local speed of sound
MAFF	Ministry of Agriculture, Fisheries and Food (UK - now DEFRA)
mag	magnetic
	magnitude (of star)
MAGR	Miniaturised Airborne GPS Receiver (US - Rockwell)
MAGVAR	magnetic variation
MAIA	Measuring Atlantic Inflow into the Arctic (EU MAST V project)
MAIB	Marine Accident Investigation Branch (UK)
MAP	missed approach point
MARAD	Maritime Administration (US)
MARE	(MERR) maximum allowable range error
MAREP	Mariner Reporting System
MARIS	Maritime Information Society (EC DG III - formed May 97) <i>www.maris.int</i>
MARPOL	Int Convention for the Prevention of Pollution from Ships (1973/78)
MARSOURCE	A fisheries & marine environment info network (MARIS)
MARTRANS	Info network on movement of cargo vessels (MARIS)
MARUSE	GJU maritime project under FP6
maser	microwave amplification by stimulated emission of radiation

MASPS	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>
MAST	Marine Science and Technology (EC R&D project - MAST III)
MasterMap	OS definitive map database of UK
MATCA	ATCOs' union in Malta
MATHP	missed approach holding waypoint
MATO	military air traffic operations
MATS	Manual of Air Traffic Services (UK - CAP 493)
MATWP	missed approach turning waypoint
MATZ	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>
MAU	modular avionics unit
MAUW	maximum all-up weight
MAV	micro aerial vehicle
MAWP	missed approach waypoint
Mayday	"m'aidez" - help me. International radio distress call
MB	magnetic bearing (angular distance from MN to the object)
Mb	megabyte (= 1,048,576 bytes)
mB	millibar <i>Superseded by the hectopascal (hPa). 1mB = 100 pascals = 1 hPa.</i>
MBB	Maritime Black Box (EU R&D project)
Mbps	Million bits per second
MC	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
MC-UWB	multi-carrier UWB
MCA	Marine and Coastguard Agency <i>An executive agency of the UK DfT, based in Southampton.</i>
MCB	multi-communications box
MCC	Master Control Centre (EGNOS - Toulouse) Mission Control Centre (COSPAS-SARSAT) mobile country code (phone network) multi-crew cooperation
MCDU	multifunction control and display unit
MCF	Mission Control Facility (Galileo)

MCMT	mean corrective maintenance time
Mcps	megachips per second
MCS	Master Control Station (GPS - Colorado Springs) (MSAS) Mission Control System (Galileo)
MCT	mercury cadmium telluride (IR sensor material)
MCTA	military control area (ATC)
MCTZ	military control zone (ATC)
MCW	modulated continuous-wave
MCWG	Maps and Charts Working Group (CAA)
MDA	minimum decision altitude (of landing aircraft)
MDB	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>
MDCE	Maritime Data Centre of Europe (independent, based in Copenhagen)
MDE	marginally detectable error <i>The maximum position offset caused by a MDB in a LOP or observation.</i>
	minimum detectable error
MDES	Measurement Data recording and data Evaluation System (DFS) <i>German system for permanent GNSS data recording, monitoring and analysis.</i>
MDGPS	Maritime DGPS (USCG, part of NDGPS)
MDH	minimum descent height (of landing aircraft)
MDIS	Midlands Driver Information System
MDM	modem data manager
MDO	marine diesel oil
MDT	mean down time mobile data terminal (in vehicle)
MEA	minimum enroute altitude (US)
MECP	Mobile Electronics Certified Professional (UK)
MED	Marine Equipment Directive
MEDA	military emergency diversion aerodrome
MEDEVAC	medical evacuation
MEDLL	multipath estimating delay lock loop
MEGRIN	Multi-purpose Ground Related Information Network (mapping)
MEHRA	marine environmental high risk area
MEL	minimum equipment list (eg to operate an aircraft safely) <i>May be associated with DDG/CDL).</i>
MELTT	French Ministry of Transport

MEMS	micro-electromechanical system (eg micro IMU from ~ 1995)
MEO	medium earth orbit <i>Satellite orbits of 5,000-20,000 km.</i>
MEOLUT	medium earth orbit local user terminal (eg Galileo)
MEPC	Marine Environment Protection Committee (IMO)
MERC	maritime emergency reception centre <i>For dealing with ships in difficulty rather than distress.</i>
Merged Consortium	For Galileo Concession (bid in Oct 05) <i>AENA, Alcatel, EADS Space, Hispasat, Inmarsat, Finmeccanica, Thales.</i>
Meridian	Great circle through the geographical poles of the earth
Meridional difference	($\Delta\Phi$) Difference of the meridional parts of any 2 given parallels
Merparts	(Φ) 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>
MERPR	maximum allowable error in pseudorange
MERR	(MARE) maximum allowable range error
MERSAR	MERchant ship Search And Rescue (IMO manual)
MERV	maximum tolerable vertical position error
MES	mobile earth station <i>For maritime use known as SES. For land use known as LES or LMES.</i>
MESA	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>
MESF	Mobile Electronics & Security Federation (UK)
MESFET	metal semiconductor field effect transistor
Mesosphere	Part of atmosphere from ~ 50-85 km
METAR	meteorological aerodrome report
METAREA	sea area for GMDSS meteorological information
MetFAX	UK Met Office faxed-based dial-up weather service
Metop	Satellites (3) forming EPS
MF	medium frequency (300-3,000 kHz) (hectometric waves)
MFA	major floating aid (light vessel, LANBY, light float)
MFC	multi-frequency channel
MFD	multi-function display
MGF	Message Generation Facility (Galileo)
MGN	Marine Guidance Notice (MCA)
MGO	marine gas oil

MH	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>
MHRS	magnetic heading reference system
MHWN	mean high water neaps
MHWS	mean high water springs
MHz	megahertz (1,000,000 cycles per second)
MI	misleading information shallow (met)
MIC	mounain instructor certificate
MICA	multiyear interactive computer almanac
microwaves	radio waves > 1 GHz
MID	maritime identification digits
MIDAR	Marine Identity Data Automatic Response (similar to aviation SSR)
MIDAS	Motorway Incident Detection and Signalling System Multi-Instrument Data Analysis System (math model for ionos delay)
MIDS	Multifunction Information Distribution System (data link)
MIL-STD	Military Standard
MIME	Multipurpose Internet Mail Extension
MIN	Marine Information Note (UK)
min	minimum minute
MIO	marine information object (time-variable object in ECDIS)
MIOC	multifunction integrated optic chip (used in fibre-optic gyros)
MIP	Multiannual Indicative Programme (EC DG TREN)
MIPS	million instructions per second
MIRA	Motor Industry Research Association
MIS	management information system Marine Information System (ECDIS may contribute to it)
MISNA	Marine Information Service of North America
MISTER	Minimum Interoperability Spec for Tolling on European Roads
MIT	Massachusetts Institute of Technology (US)
MITRA	<i>Monitoring and Intervention for the TRAnsportation of Dangerous Goods (EC FP6 - 2004-06).</i>
MJD	Modified Julian Day (started midnight 17 November 1858) <i>Equals JD - 2,400,000.5.</i>
MKD	minimum keyboard display (eg AIS)
mkr	marker/marker beacon (on 75 MHz for ILS)

MLA	Mountain Leader Award multipath-limiting antenna
MLC	Mountain Leader Certificate
MLE	maximum likelihood estimator
MLLW	mean lower low water
MLP	multi-layer perceptron (neural network)
MLS	Microwave Landing System
MLU	mid-life update
MLV	medium launch vehicle
MLWN	mean low water neaps
MLWS	mean low water springs
MM	map-matching MasterMap (Ordnance Survey trademark)
MmaxCT	maximum corrective maintenance time
MMC	multi-media card (typical 64 Mb)
MMD	mean mission duration
MMG	micro-mechanical gyro (a form of MEMS)
MMI	man-machine interface (nowadays replaced by 'HMI')
MMLE	method of maximum likelyhood estimation (adaptive filter technique)
MMLS	Mobile Microwave Landing System
MMR	multi-mode receiver
MMS	Multimedia messaging service (mobile phones)
MMSI	Maritime Mobile Service Identity (Code) (GMDSS DSC)
MMW	millimeter-wave (eg radar) multipath mitigation window
MN	magnetic north <i>Northerly direction of the horizontal component of the earth's magnetic field.</i>
MNC	mobile network code (phone network)
MNE	Marine Navigation Equipment (Sub-Group of UK SON Ctee)
MNM	mathematical navigation monitor <i>Provides position estimate with associated errors by data fusion of dissimilar sensors.</i>
MNP	Master Navigation Plan (US)
MOA	memorandum of agreement
MOB	man overboard
MoBIC	Mobility of Blind and Elderly People Interacting with Computers
MoC	memorandum of cooperation
MOCA	minimum obstruction clearance altitude (US)
MOD	Ministry of Defence

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

MRIN	Member of the Royal Institute of Navigation
MRIT	Maritime Radar Interrogator-Transponder (system)
MRLG	monolithic RLG (3 orthogonal RLGs in one block, eg Kearfott T-10)
MRO	maintenance, repair and overhaul
MRS	Monitor and Ranging Station (MSAS)
MRSA	mandatory radar service area (military ATC)
MRSC	Maritime Rescue Secondary (Sub) Centre
MRSE	mean radial spherical error
MRT	mountain rescue team
MRVA	minimum radar vectoring altitude
ms	millisecond (one-thousandth of a second)
MS	Monitor Station (eg GPS)
MSA	Marine Safety Agency <i>Was part of DETR, replaced in Apr 98 by MCA.</i>
	minimum safe altitude
	minimum sector altitude
MSAs	Merchant Shipping Acts (in UK empower the GLAs)
MSAS	Multi-transport Satellite-based Augmentation System <i>Japanese WAAS.</i>
MSAWS	minimum safe altitude warning system
MSB	most significant bit
	multi-sensor box
MSC	Maritime Safety Committee (IMO)
MSD	minimum separation distance
MSDP	multi-sensor data processor
MSF	Mission Support Facility (Galileo)
MSG	Meteosat Second Generation (3 met/S&R sats first launched 2002)
MSI	Maritime Safety Information (IMO)
MSK	minimum shift keying
msl	mean sea level
MSN	Merchant Shipping Notice (M-Notice)(UK)
MSS	mean sea surface
	mobile satellite service
MSSR	monopulse secondary surveillance radar
MSU	mobile satcom unit
MT	mobile terminal
MTA	military training area
MTB	Mediterranean Test Bed (part of STENAV for Galileo)
MTBCF	mean time between critical failures

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

NAGU	Notice Advisories to GLONASS Users
NANU	Notice Advisory to Navstar Users
NAO	North Atlantic Oscillation
NaPTAN	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>
NARSIA	North American Remote Sensing Industries Association
NAS	National Airspace System (US) Naval Air Station (US) Newly Associated States (into the EU)
NAS IG	National Airspace System Implementation Group (Australia)
NASA	National Aeronautics and Space Administration (US)
NASDA	National Space Development Agency of Japan
NATCA	National Air Traffic Controllers Association (US)
NATMAC	National Air Traffic Management Advisory Committee (UK)
NATO	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 (2006).</i>
NATS	National Air Traffic Services Ltd (UK ATSP)
NATSPG	North Atlantic Systems Planning Group
NAUPLIOS	Navigation and Perilous Goods Input and Output System (Galileo proj)
NAV	IMO Sub-Committee on Safety of Navigation (NAV 49 sits in 2003)
NAV-msg	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>
Navaid	NAVigation AID
NAVAREA	Sea area for GMDSS radio navigation warnings
NAVCEN	Navigation Centre (USCG)
NAVD	North American Vertical Datum
navigation	<i>The process of planning, recording and controlling the movement of a craft from one place to another (IMO).</i>
NAVSOL	navigation solution
NAVSTAR	NAVigation Satellites with Timing And Ranging (GPS)
NAVTEX	Navigational Information Telex Services
NavWar	NAVigation WARfare (includes military GPS programme)
NAWC	Naval Air Warfare Centre (USN - Patuxent River)
NBDP	narrow band direct printing (eg GMDSS and NAVTEX)
NCAA	Norwegian Civil Aviation Administration
NCF	National Coaching Foundation (trading arm is scUK)

	Navigation Control Facility (Galileo)
NCI	National Coastwatch Institution (UK)
NCP	National Contact Point (eg for FP6)
	National Contingency Plan
NCS	Network Co-ordinating Station (Inmarsat)
	network communication system
NCW	network centric warfare
	non-coherent continuous wave (transmission)
ND	navigation display
NDB	nondirectional beacon
NDC	National Document Centre (Greek AGI)
NDGPS	Nationwide DGPS (US)
NDPB	non-departmental public body (UK)
NE	normalised error (for GNSS compares with HDOP = 4)
NEAN	North European ADS-B Network (EU/EUROCONTROL)
NEAP	North-European ADS-B Application Project (EU)
NEC	network-enabled capability
NECSA	Navigational Electronic Chart System Association
NELS	Northwest European LORAN-C System
NEMO	Navigation system analysis suite for European Maritime Operations <i>GLAs/Nottingham Scientific (UK).</i>
NEMS	nano-electromechanical system (technology beyond MEMS)
NEOSIT	navigation/electro-optic sensor integration
Nepheloid layer	<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>
NeQuick	model to calculate slant ionospheric delay (eg Galileo)
NERC	Natural Environment Research Council (UK)
	New En Route Centre (Swanwick, UK)
NES	Navigation Ground Earth Station (MSAS)
NESTBed	North European Satellite Test Bed (experimental SBAS)
NEXCOM	Next Generation Air/Ground Communications (US) <i>Digital air/ground comms system (generic name of VDL-2 follow-on)</i>
NFM	near field monitor
NGDC	National Geophysical Data Centre
NGDF	National Geospacial Data Framework (UK)
NGO	non-governmental organisation
NGPS	Natural GPS (ie unaided)
NGS	National Geodetic Survey (US)
NGVD	National Geodetic Vertical Datum (US)

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

NOMADS	North Sea Model Advection Dispersion Study (EU MAST project)
NON	unmodulated continuous-wave emission
Non-precision Approach	<i>A standard instrument approach procedure in which only horizontal guidance is given.</i>
NONAV	no navigation (ATC call/squawk in event of loss of nav capability)
NOR	notice of readiness (shipping)
NORDO	no radio (ATC squawk)
NOSC	Naval Ocean Systems Centre (US)
NOSIG	no significant change (met)
NOTAM	Notice to Airmen
NP	Naval Publication
	non-periodic
NPA	non-precision approach
	<i>A standard instrument approach in which no electronic glidepath/slope is provided.</i>
	Notice of Proposed Amendment (EU JAA)
NPL	National Physical Laboratory (The UK NMI))
NPPL	National Private Pilot's Licence
	<i>(A) = aircraft, (B) = balloons, (H) = helicopters, A(M) = microlights.</i>
NPR	noise preferential route (ATC)
NPRM	Notice of Proposed Rulemaking (FAA, FCC etc)
NPTG	National Public Transport Gazetteer (UK)
NPV	net present value
	non-precision approach with vertical guidance
NRL	Naval Research Laboratory (US)
NRNP	Norwegian Radionavigation Plan (first edition issued 2003)
NRP	National Route Program (US ATC)
NRS	Navigation-Related Communication Services (GALILEO)
NRT	near real-time
	net registered tonnage
ns	nanosecond (1/1,000,000,000 of a second)
NS	Naval Station (US)
Ns	nimbostratus cloud
NSA	National Security Agency (US)
NSAP	Network Service Access Point (ATN)
NSC	National Safety Council (US)
	no significant cloud
	non-standard C/A code (GPS)
NSCC	Navigation System Control Centre (Galileo)
NSE	navigation system error

NSGU	Navigation Signal Generation Unit (Galileo)
NSP	navigation signal processor
NSRS	National Spatial Reference System (US)
NSTB	National Satellite Test Bed (WAAS)
NSW	no significant weather
NT	net tonnage
NTD	National Topographic Database (UK)
NTDS	Navy Tactical Data System (US)
NTE	not-to-exceed
NTF	National Transfer Format (OS format to transfer digital mapping)
NTIA	National Telecommunications and Information Administration (US)
NTS	National Travel Survey (UK DTLR)
	Navigation Technology Satellite
NTSB	National Transportation Safety Board (US)
NTSC	National Television Standard Committee (US/Japan TV standard)
	National Transportation Systems Center (US)
NUC	not under command
NUMAST	National Union of Marine, Aviation & Shipping Transp't Officers UK
NUP	NEAN Update Programme (EUROCONTROL)
	north pole up (of a magnet)
NVC	National Vocational Qualification (UK)
NVEE	night vision enhancement equipment
NVG	night vision goggles
NWP	numerical weather prediction
°	degree (unit of angle = $\frac{1}{180}$ rad)
O/B	on board
O/H	overhead
O&M	operations and maintenance
O&S	operations and support
OAB	operational advisory broadcast
OAC	Oceanic Area Control
	Operations Advisory Committee (CAA)
OACC	Oceanic Area Control Centre
OAS	Open Access Service (Galileo basic service, free of charge)
OASIS	Operational and Supportability Implementation System (FAA)
OAT	operational air traffic
	outside air temperature
OBDS	onboard diagnostic system
OBE	on-board equipment

OBI	omni-bearing indicator
OBO	ore/bulk/oil (carrier)(ship)
OBS	omni-bearing selector
OBT	on-board terminal
OBU	on-board unit (in a vehicle)
OCA	obstacle clearance altitude Oceanic Control Area
OCC	Operations Control Centre (Inmarsat)
OCH	obstacle clearance height (for landing aircraft)
OCIMF	Oil Companies International Marine Forum
OCR	optical character recognition
OCS	operational control system
ODAS	Ocean Data Acquisition System
ODBC	open database connectivity (allows databases to exchange data)
ODL	opposite direction level (ATC)
ODN	Ordnance Datum Newlyn (UK system for orthometric height amsl)
ODR	Operations Definition Review (EGNOS)
ODTS	(OD&TS) Orbit Determination and Time Synchronisation (Galileo sys)
OECD	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>
OEM	original equipment manufacturer
OEP	object-orientated engineering process Operational Evolution Plan (US FAA)
Ofcom	Office of Communications <i>Took responsibility of UK spectrum management from RA in Dec 03.</i>
OFDM	orthogonal frequency division multiplex
OFP	operational flight program
Oftel	Office of Telecommunications (UK) (Transfer to Ofcom 29 Dec 03)
OGC	Open GIS Consortium (178 members in 1999) <i>www.opengis.org</i>
OGDI	Open Geospacial Datastore Interface
OHI	Organisation hydrographique internationale (IHO)
OIG	Office of the Inspector General (US DOT)
OJTI	on-the-job training instructor
okta	one-eighth (of cloud cover)
OLED	organic light-emitting display

OM	outer marker (ILS)
OM&S	Operation, Maintenance and Support (US)
OMBO	one man bridge operation
OMEGA	Optimal Method for Estimating GPS Ambiguities (RTK software)
Omega	VLF navigation system now out of service (withdrawn 30 Sep 97)
OMEX	Ocean Margin Exchange (EU MAST project)
OMUX	output multiplexer
ONR	Office of Naval Research (USN)
OnStar	2nd generation in-vehicle nav system (GPS + GSM) (General Motors)
OOD	officer of the deck
OOK	on-off keying
OOP	object-orientated paradigm
OOSA	Office for Outer Space Affairs (UN, based in Vienna)
OOW	officer of the watch
OPA 90	Oil Pollution Act 1990 (USA)
OPE	Operational Elements (EGNOS)
OpEval	operational evaluation
OPF	Operations Preparation Facility (Galileo)
OPG	out-of-plane gyroscope
OPMET	operational meteorology (information)
OPRC 90	Oil Pollution Preparedness, Response and Cooperation (Convention) <i>Adopted by IMO '90, came into force '95. 66 states ratified by '02.</i>
OPRC-HNS	IMO Protocol to expand OPRC 90. Adopted 2000.
OPRG	optical passive ring-resonator gyro
OQR	Operations Qualification Review (EGNOS)
ORD	observed range deviation operational requirement document
OREGIN	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>
ORIENTA	System for visually impaired in cities (Spain)
ORR	operational readiness review
Orthodrome	great circle
OS	Open Service (Galileo) <i>Providing position (5-10m) and time (50ns) free of charge, but no integrity info.</i>
	Ordnance Survey (UK)
OSA	own speed across track
OSCAR	Ordnance Survey digital dataset for mapping UK

OSGB	Ordnance Survey GB (OSGB-36 datum hitherto used on OS charts)
OSGi	Open Service Gateway Initiative (telematics standard)
OSGM91	Ordnance Survey Geoid Model 1991 (UK)
OSI	Open System Interconnection (defined by ISO 7-layer model)
OSL	own speed along track
OSMM	Ordnance Survey MasterMap (UK)
OSPAR	Oslo and Paris Commission <i>European body co-ordinating national decisions on maritime environment issues.</i>
OSPF	Orbitography and Synchronisation Processing Facility (Galileo)
OSS	Orbitography and Synchronisation Station (Galileo)
OSTN97	Ordnance Survey National Grid Transformation 1997 (UK) <i>Used to convert from ETRS89 to OSGB36 and ODN.</i>
OSV	offshore support vessel
OT&E	Operational Test and Evaluation
OTA	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>
OTDOA	observed time difference of arrival (cellphone location technique)
OTF	on-the-fly Open Telematics Framework optimum traffic frequency (best comms freq to use - normally in HF)
OTS	Organised Track Structure (N Atlantic)
OVC	overcast (8 oktas of cloud)
OVN	Osterreichischer Verein für Navigation <i>Austrian Institute of Navigation</i>
OWC	obstacle warning and cueing
OWS	OGC Web Services (OWS-2 is Phase 2 Initiative)
OZT	obstacle zone by target
P	pico (SI unit multiplier of 10^{-12}) positioning
P-Code	(or P(Y)) Precision (or Pseudorandom) Code <i>A PRN code transmitted by GPS satellites. Comprises 2.35×10^{14} 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>
P-CPICH	Primary Common Pilot Channel (GNSS downlink)
P-RNAV	precision area navigation <i>ICAO definition - having a nav performance equal to or better than a track-keeping accuracy of ± 1 NM 95% of time.</i>

P(Y)	encrypted P-Code (comprises modulo-2 addition of P-Code & W-Code)
P/F	platform (of satellite, eg Galileo)
P/L	payload (of satellite, eg Galileo)
P&I	(P and I) Protection and Indemnity (Club)
P3I	pre-planned product improvement
P4	pseudorange and phase post-processor
Pa	pascal (pressure in N/m ²)
PA	position approximate precision approach
PACF	Performance Assessment & Checkout Facility (EGNOS) <i>Located at Toulouse.</i>
PACT	Pilot Action for Combined Transport (EU) <i>Programme to give financial support for innovative combined transport schemes.</i>
PAD	packet assembly/disassembly device predicted area of danger (ARPA etc)
PADS	Position and Attitude Determination System
PAF	Postal Address File (UK Royal Mail)
PAL	Phase Alternating Line (European TV standard) <i>Uses 25Hz frame rate of 720x576 pixels.</i>
PAM	Precision Approach Module (GNSS landing system)
PAMR	Public Access Mobile Radio
Pan	international radio call signalling 'urgency'
PAN	personal area network (eg Bluetooth) position and navigation
Panamax	<i>Market category of ships notionally within the limit for transit of the Panama Canal.</i>
PANDORA	Prototyping a Navigation Database of Road-Network Attributes
PANORAMA	<i>Personalised Applications based on Reliable Positioning, Communication and GIS Management Systems in Alpine Regions (Germany).</i>
PANS	Procedures for Air Navigation Services (ICAO)
PAPA	Parallax Aircraft Parking Aid
PAPI	precision approach path indicator
PAR	precision approach radar
Parallel of altitude	<i>Circle on the celestial sphere parallel to the celestial horizon, connecting all points of equal altitude. Also called circle of equal altitudes.</i>
Parallel of latitude	<i>Circle on the earth's surface parallel to the equator</i>
PARAMOUNT	<i>Public Safety & Commercial Info Mobility Applications in the Mountains. EC project started in 2002.</i>

Paris MOU	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>
PAS	Publicly Available Specification (IEC)
PATH	Program(me) on Advanced Technology for the Highway
pax	passengers
PaxCar	RoRo ferry for longer routes with cars, treated as a passenger vessel
PB-NAV	Programme Board on Satellite Navigation (ESA)
PC	personal computer
PCA	possible course of action
PCD	preferred compass direction (used in animal navigation work)
PCI	phase code interval (LORAN-C)(20 times the GRI)
PCM	pulse code modulation
PCMCIA	Personal Computer Memory Card International Association
PD	public domain
PDA	personal digital assistant
PDC	personal digital communicator pre-departure clearance (ATC)
PDD	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>
PDF	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
PDO	process data object
PDOP	positional dilution of precision <i>The factor by which the accuracy of a 3-D fix is degraded by geometrical considerations.</i>
PDR	preliminary design review
PDSS	Pilot Decision Support System (maritime)
PE-90	A Russian terrestrial reference frame (diff from WGS 84 by 1-2 m)
PEC	Pan European Conference (IFALPA)
PED	personal electronic device
PEGASUS	Prototype EGNOS Analysis System Using SAPPHIRE (EUROCONT'L)
Pelagic	of, performed on or belonging to the upper layers of the open sea
PER	packet error rate (comms)
PETAL	Preliminary EUROCONTROL Test of Air/Ground Data Link (prog) <i>PETAL II completed in 2002.</i>
PEU	portable external unit (part of PPU)

PF	primary phase factor
PFA	Popular Flying Association
Pfa	probability of false alarm (eg in RAIM)
PFC	primary flight computer
PFD	personal floatation device
	position-fixing device
	power flux density
	primary flight display
PFI	Private Finance Initiative (UK type of PPP)
PFJS	Portable Field Jamming System (GPS - US)
PFL	practice forced landing
PFM	prototype flight model
PGCAS	Predictive Ground Collision Avoidance System
PHARE	Prog for Harmonised Air Traf'c Manage't & Res'ch in EUROCONTROL
PHM	passive hydrogen maser
PHMI	probability of hazardously misleading information
PI	practice interception
	pre-planned product improvement
	presentation interface
PIANC	(AIPCN) Permanent International Ass'n of Navigation Congresses <i>Also known as International Navigation Association. Brussels based.</i>
PIARC	World Road Association
PIC	pilot in command
PIGA	pendulous integrating gyro assembly
PINS	Pipeline Inspection Notification System (ATC)
PIR	portable ILS receiver
pixel	picture element <i>The smallest element of a computer display or output that can be controlled.</i>
PK	pseudo-kinematic
PKI	Public Key Infrastructure (for encrypting/decrypting messages)
PL	ice pellets (met)
	position line (also LOP)
	pseudolite
PLB	personal locator beacon
PLC	planar lightwave circuit (eg for connecting FOGs etc)
PLD	programmable logic device
PLEDM	phase-state low electron drive memory
PLF	passenger load factor (% of civil air available seat kilometers used)
PLGR	Precision Lightweight GPS Receiver (US)

PLL	phase-locked loop
PLOC	prolonged loss of contact (air comms)
PLSS	Precision Location Strike System (US)
PM	post meridian (after noon)
PMB	Programme Management Board (Galileo)
Pmd	probability of missed detection (eg in RAIM)
PMO	Port Meteorological Office(r)
PMR	private mobile radio (PMR446 is EU standard) <i>Up to 3 km range; no licence needed.</i>
PMS	planned maintenance system (shipping)
PMU	portable mobile unit (part of PPU) processing and monitoring unit
P _N	north geographic pole
PN	pseudo-noise
PNAV	Precise NAVigation
PND	portable navigation device (typically a PDA)
PNF	Polish Navigation Forum
PNM	pedestrian navigation module
PNR	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 & 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)
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	Portuguese Satellite (-1 carries GPS experiments)
POSSUM	Policy Scenarios for Sustainable Mobility (EU)

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
PPPS	pulse pairs per second (DME. TACAN etc)
PPS	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
PPS-SM	PPS Security Mode/Module
PPU	portable pilot unit (marine)
PR	banks (met)
PRARE	precise range and range-rate equipment (marine)
PRC	Performance Review Commission (EUROCONTROL)
	pseudo-range correction
precision	<i>The accuracy of a measurement or a position with respect to random errors (IMO).</i>
Precision Approach	<i>A standard instrument approach procedure in which both horizontal and glidepath/slope guidance is given.</i>
PReVENT	EU IP for preventive & active safety systems (DG Info Society)
PRF	pulse repetition frequency
PRIMAR	The formal service delivered by RENCs (established 1999)
Primary Means of Navigation	<i>Airborne nav system that must meet accuracy and integrity requirements but need not meet full availability or continuity-of-service requirements.</i>
Prime meridian	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>
PRM	preferred route message (North Atlantic ATC)

PRN	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>
PRNAV	precision RNAV for terminal areas (ICAO)
PROB	probability (met)
ProGIS	Promoting Geographic Information Systems (Finnish AGI)
PRoGRESS	Urban RUC demo & research project (EU-funded)
PROMISE	Pre-operational Modelling in the Seas of Europe (EU MAST III proj)
PROVESS	Processes of Vertical Exchange in Shelf Seas (EU MAST III proj)
PRS	Public Regulated Service (Galileo) <i>Uses OS plus 2 encrypted signals giving controlled access and high continuity. The 'military' signal.</i>
PRT	personal rapid transit
PRU	Performance Review Unit (EUROCONTROL)
P_s	south geographic pole
PSAP	public safety answering point (for eCall type applications)
PSC	Port State Control
PSD	power spectral density
PSDR	preliminary system design review
Pseudo-range	<i>Pure geometrical range between satellite and observer, corrupted by clock offsets, atmospheric errors and other error sources.</i>
Pseudolite	Pseudo-satellite <i>Ground-based transmitter designed to mimic a satellite (GPS).</i>
PSF	performance shaping factor (of human behaviour in HRA)
PSMSL	Permanent Service for Mean Sea Level
PSoc	Photogrammetric Society (became RSPSoc on 1 Jan 01)
PSS	packet switching stream
PSSA	particularly sensitive sea area
	preliminary system safety analysis
PSTN	Public Switched Telephone Network
PSU	power supply unit
PTAN	precision terrain-aided navigation
PTC	Positive Train Control (US DOT initiative)
PTF	precise timing facility
PTFM	passive traffic flow measurement (eg Trafficmaster)
PTS	Polar Track Structure
	Precision Timing System/Station (Galileo)
ptt	press-to-transmit
PTTI	precise time and time interval

PUFFIN	Pedestrian User-Friendly INtelligent crossing (UK DTLR)
PUNE	position component of the user navigation error (3-dimensional)
PV	pilot vessel prime vertical
PVA	position, velocity and acceleration (mode of op of integrated system)
PVT	Position, Velocity and Time (Galileo Service)
PVTA	position, velocity, time and attitude
PWC	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)
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-Zenith Satellite System (Japan) <i>3-satellite positioning system to supplement and interoperate with GPS. First launch scheduled 2008, the 2nd & 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>
RA	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
RAAN	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>
RAAS	Regional Area Augmentation System
RAC	Royal Automobile Club (UK)
RACON	RAдар beaCON (active radar beacon or transponder)
RACS	road-automobile communication system
rad	radian (180/πdegrees)
Radar	RAdio DeTection And Ranging
radio determination	<i>The determination of position, or the obtaining of information relating to position, by means of the propagation properties of radio waves (IMO).</i>
radiolocation	<i>Radio determination used for purposes other than radionavigation (IMO).</i>
radionavigation	<i>The use of radio waves in navigation for the determination of position or direction, or for obstruction warning (IMO).</i>
RAeC	Royal Aero Club of the United Kingdom
RAeS	Royal Aeronautical Society
RaFFLES	Radio Frequency Functional Level Evaluation Suite (UK NATS)
RAFS	rubidium atomic frequency standard
RAFS EU	rubidium atomic frequency standard evaluation unit
RAI	Registro Aeronautico Italiano (Italian CAA)
RAIDS	Rangeless Airborne Information Datalink System

RAIM	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>
RAL	Rutherford Appleton Laboratory (Oxford)
RAM	random access memory reliability and maintainability
RAMARK	radar marker beacon
random error	<i>That error which can be predicted only on a statistical basis (IMO).</i>
RAR	real aperture radar
RAS	radar advisory service (ATC) Radio Astronomy Service (of allocated spectrum bands) rectified airspeed regional augmentation system replenishment at sea
RAT	Risk Awareness Tool (FSF)
RAVI	Netherlands Council for Geographic Information
RBDS	radio broadcast data system
RBI	relative bearing indicator
RBN	radio beacon
RCC	real to complex convertor (signal processing) Rescue Co-ordination Centre
RCD	Recreational Craft Directive (EU)
RCDS	raster chart display system
RCL	runway centre line
RCM	reliability centred maintenance
RCP	required communications performance
RCS	radar cross-section (normally given in square metres)
RCVR	receiver (or Rx)
RD	requirements document/definition
RDBMS	Relational Database Management System
RDC	Research & Development Center (USCG)
RDF	radio direction find(er)(ing)
RDS	Radio Data System <i>Sub-carrier on FM broadcasts carrying data, which may include DGPS corrections and TMC.</i>
RDS-EON	Radio Data System - Enhanced Other Networks <i>Digital traffic messages carried by RDS.</i>
RDS-TMC	Radio Data System - Traffic Message Channel <i>Digital traffic messages carried by RDS.</i>

RDSS	Radio Determination Satellite Service
RECNET	REceiver NETwork (eg EGNOS)
REDAN	REd de Datos de Aeropuertos y Navegación (Spanish aero comms net)
redundancy	<i>The existence of multiple equipment or means for accomplishing a given function (IMO).</i>
REG	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>
REGAL	REconfigurable REceiver for GALileo
REIL	runway end identifier lights
relative accuracy	<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>
reliability	(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>
RENC	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>
repeatability	<i>The accuracy of a positioning system, taking into account only the random errors. Normally expressed in a 95% probability circle (IMO).</i>
repeatable accuracy	<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>
RESCU	2nd generation in-vehicle nav system (GPS + GSM) (Ford)
RF	radio frequency range finder route to a fix
RFFE	RF front end
RFI	radio frequency interference request for information
RFID	radio frequency identification (eg for air baggage - uses 13.56 MHz)
RFP	request for proposal

RFU	radio frequency unit
RGB	Red-Green-Blue (colour system for colour monitors)
RGCSF	Review of the General Concept of Separation Panel (ICAO)
RGPF	Règlement Général de Police Français (French derivative of CEVNI)
RHA	Road Haulage Association Ltd (UK)
RHCP	right hand circularly polarised
RHINO	Receiver for High Integrity Navigation Operation (Raytheon)
RHL	rhumb line
RHS	right hand seat (cockpit)
RHUM	relative humidity
RI	restricted information (eg value-added data on chart)
RIA	Regulatory Impact Assessment (UK requirement)
RIB	rigid inflatable boat
RIG	rate integrating gyro
RIMS	Ranging and Integrity Monitoring Station (EGNOS has 12)
RIN	Royal Institute of Navigation
RIINA	Registro Italiano Navale (classification society) The Royal Institution of Naval Architects
RINEX	Receiver-INdependent EXchange (format for exchanging GPS data)
RIS	radar information service (ATC) River Information Service (telematics)
RISA	reduced instruction set architecture
RISC	reduced instruction set computer
RL	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>
RLD	Rijksluchtvaartdienst (Netherlands CAA)
RLG	ring laser gyro (introduced ~ 1975)
RLM	return link message
RLP	rejected landing procedure
RLSS	Royal Life Saving Society (UK)
RM	reference model relative motion
RMA	reliability, maintainability, availability
RME	range measurement equation
RMES	root mean error Square
RMI	radio magnetic indicator
rms	root mean square (error) <i>The variability of a measurement such as a single LOP in one dimension; with no bias also an estimate of the standard deviation of the errors.</i>

rmse	root mean square error (see rms)
RMT	National Union of Rail, Maritime and Transport Workers (UK)
RMU	radio management unit
RNAS	Royal Naval Air Station
RNAV	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>
RNC	raster navigational chart
RNEU	Radio Navigation Experimentation Unit (ESA)
rng	range
RNLI	Royal National Lifeboat Institution
RNN	RadioNavigeringsNämnden (Swedish Radio Navigation Board) <i>Formed in 1950 with ~ 20 government, institutional and commercial members. Applied for EUGIN membership 2003.</i>
RNP	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.</i> Required Navigation(al) Performance Study Group (ICAO)
RNS	RadioNavigation Service (of allocated spectrum bands)
	relative navigation system
RNSS	RadioNavigation Satellite Service
ROB	remain on board
ROHS	Restriction of Hazardous Substances (EC Directive)
ROM	read-only memory
ROMANSE	Road Management System for Europe (EU)
ROP	responsible operator position (in SAR)
RoPax	As RoRo ferry but with 12+ pax and treated as a passenger vessel
ROPME	Regional Organisation for the Protection of the Marine Environment
RoRo	Roll-on, roll-off ferry (<12 pax/drivers and treated as cargo vessel)
RoS	Registers of Scotland (= HMLR)
ROT	rate of turn
ROV	remotely operated vehicle
RP	radar plotting reporting point
RPER	radial position error rate
RPIN	Russian Public Institute of Navigation
RPK	revenue passenger kilometres (a measure of civil air actual traffic)

RPNR	Règlement de Police pour Navigation du Rhin (Rhine deriv of CEVNI)
RPS	Regional Positioning System (to provide WAAS in a particular area) Regional Pressure Setting
RR	Radio Regulations (ITU) reference receiver (eg LAAS)
RRC	range-rate correction root raised cosine (shape of an autocorrelated pulse in navsat sig)
RS	radio spectrum ranging source (eg WAAS) reference station (eg LAAS) Russian Maritime Register of Shipping (classification society)
RSA	recognised spectrum access relative speed across track Russian Space Agency
RSD	radar system data
RSIM	reference station integrity monitor
RSL	relative speed along track
RSM	reduced separation minima (air traffic)
RSO	Range Safety Officer
RSPSoc	Remote Sensing and Photogrammetry Society <i>Formed 1 Jan 01 from RSS and PSoc. Based Nottingham University.</i>
RSS	Regional Safety Service (Galileo) Register of Shipping and Seamen Remote Sensing Society (became RSPSoc on 1 Jan 01)
rss	root sum square
RT	(R/T) radio telephony Ranging and Timing (Galileo service) remote terminal
RTA	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>
RTB	Research and Technology Board (NATO - part of RTO) return to base
RTCA	Radio Technical Commission for Aeronautics (US)
RTCM	Radio Technical Commission for Maritime Services (US) <i>RTCM SC-104 developed the recommended standards for DGPS.</i>
RTD	Research and Technological Development (EU transport projects)
RTE	radar target enhancer (transponder on target) route

RTF	radio telephony
RTI	road traffic informatics (sometimes 'infrastructure')
RTK	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>
RTMT	read the manual training!
RTO	real-time operating system rejected takeoff Research and Technology Organisation (NATO = RTB + RTA)
RTOD	real-time precise orbit & clock determination
RTPI	real-time passenger information (for buses etc)
RTS	Rauch-Tung-Striebel (algorithm used to smooth Kalman filter)
RTT	round trip time
RTTI	real-time traffic and travel information
RTTT	road transport and traffic telematics
RTZ	return to zero
RU	receiving unit rover unit
RUC	road user charging (a form of EFC)
RULES	RA Unified Licensing Executive System
RVR	runway visual range
RVSM	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>
RW	random walk (Kalman filter technique) runway
RWD	relative wind direction
RWS	relative wind speed
Rwy	runway
Rx	(RCVR) receiver
RYA	Royal Yachting Association
s	second
S-57	Standard for exchange of ECDIS data (IHO)
S-band	Old radar band 2-4 GHz = 15-7.5 cm <i>(ITU assigned 2,300-2,500 & 2,700-3,700 MHz).</i>
S-CRPA	small controlled reception pattern antenna
S-VDR	simplified voyage data recorder (possible retrofit for older ships)
S@tcom	BNSC programme (includes sponsorship of Galileo Partnership)
S/N	signal-to-noise ratio

S/N₀	signal-to-noise density ratio
S&P	simulation & prediction
S&R	(SAR) search and rescue
SA	(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
SAASM	selective availability anti-spoofing module
SAC	Special Area of Conservation (EU Habitats & Bird Directives)
SADIS	SATellite DIStribution System (Met) <i>Provides point to multi-point real-time met data.</i>
SAFEMAR	Development project for ship reporting system (MARIS)
Safety Regulation	Definition & enforcement of rules relating to safety
SAFI	semi-automatic flight inspection
SAG	single axis gyroscope
SAGA	Standardisation Activities for GALileo <i>Platform for establishing world-wide interoperability between Galileo and other systems. Consortium led by Sextant Avionique.</i>
SAL	supplementary approach lighting
SAM	methodology for safety assessment System Area Monitor (LORAN-C)
SAMSO	Space and Missile Systems Organization (US)
SAPPHIRE	Satellite & Aircr'ft Database Project for System Integrity Research <i>EUROCONTROL project.</i>
SAR	(S&R) search and rescue synthetic aperture radar
SARGAL	study for Search And Rescue in GALileo (EC)
SARIS	Search and Rescue Information System (SARIS II current in 2003)
SARPS	Standards and Recommended Practices (ICAO)
SARSAT	SAR Satellite-Aided Tracking
SART	search and rescue transponder
SAS	Safety Access Service (Galileo) <i>Requirements for aviation safety-critical applications include: En-route & 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 appraoch: 6m hor, 1m vert, alert time 1s.</i>
	safety at sea

	standard altimeter setting (1013.2 mB or 29.92 in Hg)
SAT	static air temperature
SATCO	senior air traffic control officer
SATHIA	SATellite Hyperbolic Intersection Algorithm (for integrity)
SATNAV	satellite-based navigation
SATR	Static Antenna Test Range (for GPS jamming tests - US)
SATURN	SATellite-based aUtonomous tRain localisation system
SBAC	Society of British Aerospace Companies Ltd
SBAS	satellite-based augmentation system
SBB	smart buffer box
SBC	single board computer
SBCN	space-based communication network (GNSS)
SBEN	space-based external navigation (system) (GNSS)
SC	sector controller (ATC)
	service centre (GNSS)
	Special Committee (eg RTCM SC-104)
Sc	stratocumulus cloud
SCAAR	State Civil Aviation Authority of Russia
SCADA	supervisory control and data acquisition
SCAR	Scientific Committee on Antarctic Research
SCART	Syndicat des Constructeurs d'Appareils Radiorecepteurs de <i>Also known as Peritel or Euroconnector (for video).</i>
SCAT-1	Special CAT 1 (ILS)
Scatterometer	An instrument which measures dispersal
SCAWVEX	Surface Current and Wave Variability Experiment (EU MAST II)
SCDS	ship control display system
SCF	Satellite Control Facility (Galileo)
SCH	set clearance height (ATC)
ScOACC	Scottish and Oceanic Area Control Centre (ATC)
SCOOT	Split, Cycle and Offset Optimisation Technique <i>Controlling traffic signals automatically to reflect traffic flow.</i>
SCOPIC	Special Compensation P&I Clause
SCOR	Scientific Committee on Oceanic Research
SCOS	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>
SCT	scattered cloud (3-4 oktas)
SCU	signal conditioning unit
scUK	sports coach UK (trading arm of the NCF)
SCW	swept continuous wave (transmission, often a form of jamming)

SD	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>
SDF	single degree of freedom
SDGPS	Smoothed DGPS
SDK	software developers'/service development kit
SDLC	synchronous data link control
SDME	speed and distance measuring equipment (maritime)
SDO	service data object
SDR	software-defined radio system design review
SDSL	Symmetric Digital Subscriber Line <i>For Web access using normal phone lines at speeds up to 2.3 Mbps.</i>
SDTS	spacial data transfer standard
SEA	strategic environmental assessment
Sea Areas A1-A4	GMDSS areas representing differing coverage <i>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.</i>
SED	storm enhanced density (of ionosphere)
Seiche	<i>The oscillation of a body of water at its natural period, superimposed on normal tidal changes.</i>
SEIFR	single-engine IFR
Selcal	selective calling (HF and VHF)
SELS	Southern Europe LORAN-C System
SENC	system electronic navigation chart
SEP	spherical error probable <i>The radius of a sphere, centered at the measured position, inside which the true position lies with 50% probability.</i>
service capacity	<i>The number of users a service can accommodate simultaneously (IMO).</i>
SES	satellite/ship earth station Shelf Edge Study (part of LOIS project) Single European Sky (EC/EUROCONTROL project)
SESAME	Project to create a European ATM roadmap
SET	selective event training (of simulation) Sensors and Electronics Technology Panel (NATO RTO)

SF	scale factor secondary phase factor stride frequency
SFC	single frequency channel
SFD	satellite failure detection (component of SBAS)
SG	snow grains (met) symbol generator
SGF	Space Geodesy Facility (formally SLR) <i>Worldwide series of laser rangars measuring satellie heights up to 19,000 km to about 1 cm accuracy. UK one based at Herstmonceux.</i>
SGR	skywave-to-groundwave ratio (of RF transmission)
SH	showers (met)
SHA	siderial hour angle
SHAG	Small Helicopter Advisory Group (CAA)
SHIPPOS	SHIP POSitioning Reporting Service
SHOM	Service Hydrographique et Oceanographique de la Marine (FR)
SI	Système Internationale d'Unités <i>International system of units, the outcome of the 9th General Conference of Weights and Measures in 1948.</i>
SIA	French Aeronautical Information Service
SIAP	standard instrument approach procedure
SIC	second in command (co-pilot or first officer (air))
SID	standard instrument departure sudden ionospheric disturbance
SIF	selective identification feature (ATC secondary radar)
SIG	GIS (geographic information systems) in many languages
sigma	Greek letter σ normally used for standard deviation
SIGTTO	Society of International Gas Tanker and Terminal Operators
SIL	safety integrity level system integration laboratory
SIM	subscriber identification module
SIMRSN	Singapore Integrated Multiple Reference Station Network
SINCTA	ATCOs' union in Portugal
single point of failure	<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>
SINR	Signal to Noise plus Interference Ratio
SINS	shipborne INS
SIOM	standard input/output module
SIP	session initiation protocol

SIPT	Société internationale de photogrammétrie et de télédétection (<i>ISPRS</i>).
SIR	signal-to-interference ratio
SIRC	Seafarers International Research Centre (based in Cardiff, Wales)
SIReNaC	Database holding ships' info under the Paris MOU
SIRU	space inertial reference unit
SIS	signal-in-space
SISA	signal-in-space accuracy
SISE	signal-in-space error
SISMA	signal-in-space monitoring accuracy
SISNeT	Signal-In-Space through the interNeT (ESA project for EGNOS)
SIU	secure interface unit
SiVSG	Silicon Vibrating Structure Gyro (BAe)
SKC	sky clear (met)
SKYCONTROL	ATCOs' union in Switzerland
sl	(s/l) sea level
SL	step length
SLA	Service Level Agreement (eg for Galileo)
SLD	superfluorescent laser diode
SLR	satellite laser ranging (now called SGF)
SLS	Satellite Landing System
SLV	solar light vessel
SMAC	Scene-Matching & Area Correlation (System)
SMAG	Spectrum Management Advisory Group (RA NDPB)
SMART	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>
SMarT	Support for Maritime Training Scheme (UK)
Smartnav	In-vehicle satnav using Trafficmaster
SMC	Safety Management Certificate (ISM Code)
SMEF	System Management & Engineering Facility (LSU)
SMF	separation monitoring function (ATC)
SMG	speed made good (speed (of ship) between 2 fixes)
SMGCS	Surface Movement Guidance & Control System (for airfields)
SMLC	summer mountain leader certificate
SMO	spectrum management organisation
SMRS	surface movement radar system (airfields)
SMS	safety management system Short Message Service (brief text messages over mobile phones)

SN	snow (met)
SNAG	Satellite Navigation Applications Group (EUROCONTROL)
SNAS	Satellite Navigation Augmentation System (Chinese WAAS)
SNCTA	ATCOs' union in France
SNF	satellite navigation frame
SNMTT	Satellite Navigation and Mobile Telephone Technology (CARDME)
SNPWG	Standardisation of Nautical Publications Working Gp (IHO CHRIS)
SNR	signal-to-noise ratio
SNU	standard navigation unit
SOA	Silicon Oscillating Accelerometer (for MEMS IMU - Draper Labs) speed of advance (speed to make good) <i>Estimated speed (of ship) relative to the earth.</i>
SOAP	Simple Object Access Protocol (for OpenGIS)
SOCP	Ship Operations Cooperative Program(me) <i>Sponsored by the US Maritime Administration (MARAD).</i>
SOCRATES	System of Cellular Radio for Traffic Efficiency and Safety (EU)
SOG	speed over ground <i>Speed (of ship) relative to the earth, measured on board (the ship).</i>
SOGI	Swiss Organisation for Geo-Information
SOI	signal of interest
SOIT	Satellite Operational Implementation Team (FAA)
SOL	safety of life
SoL	Safety of Life Service (Galileo) <i>Fee-paying service providing integrity info as well as OS features.</i>
SOLAS	Safety of Life at Sea (often SOLAS 74) <i>IMO Convention of 1974.</i>
Sole Means of Navigation	<i>An approved system that must meet 4 performance requirements: accuracy, integrity, availability and continuity-of-service.</i>
SOM	self organising map (of a neural network)
SOP	standard operating procedure
SoP	Statement of Principles (EC inviting compliance by states) <i>eg a 1999 one was on 'HMI for in-vehicle telematics'.</i>
SOP	surface of position
SOPEP	Shipboard Oil Pollution Emergency Plan
SOSREP	Secretary of State's Rep for Marine Salvage and Intervention
SOTDMA	self-organising time division multiple access
SOURDINE	French for 'mute'. EC DGVII Project for reducing airport noise
SP	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>
SPA	Special Protection Area (EU Habitats & Bird Directives)
SPACE	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>
SPACECOM	US Space Command (Colorado Springs)
SPAD	signal passed at danger (railway)
SPD	speed (own (ship's) speed in dead ahead direction)
SPEED	Support Platform for EGNOS Evolution and Development
SpeedAlert	EC (DG TREN) project to harmonise in-vehicle speed alert systems <i>One-year project from May 2004.</i>
SPF	Service Products Facility (Galileo) single-point-failure
SPI	ship-port interface (IMO)
SPIRE	Space Inertial Reference Equipment (US first airborne INS - 1953)
SPL	signal power level
SPM	single point mooring
SPOC	SAR Point of Contact
SPOS	Ship Performance Optimisation System
SPRUC	satellite positioning based road user charging
SPS	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>
Sps	symbols per second
SPWG	Strategic Planning Working Group (IHO)
SQ	squalls (met)
SQL	Structured Query Language (for databases)
SQM	signal quality monitoring
SQS	Safety Quality Management and Standardisation (EUROCONTROL)
squawk	to transmit via a transponder
sr	steradian (solid angle)
SR	small hail or snow pellets (met) sunrise
SRA	surveillance radar approach
SRC	Safety Review Commission (EUROCONTROL) Short Range Certificate (for GMDSS VHF equipment)
SRD	short-range device (eg electronic car key) <i>Typically use 418 MHz in UK, 433.92 MHz in Europe.</i>

SRG	Safety Regulation Group (CAA)
SRGPS	Shipboard Relative GPS (uses LAAS to replace radar)
SRR	Search and Rescue Region short-range radar (usually for vehicles using 24 GHz UWB) system requirements review
SRU	shop-replaceable unit
SS	sandstorm (met) signal strength space segment spread spectrum sunset
SSA	Specific Support Action (EU FP6) system safety analysis
SSB	single sideband
SSCC	Safety Standards Consultative Committee (EASA)
SSFC	sequential single-frequency code system
SSH	sea surface height
SSI	small scale integration (of chips)
SKL	ATCOs' union in Slovenia
SSL	signal simulation level
SSN	SafeSeaNet (EU & EEA to exchange info on ship moves & cargo)
SSOA	Standby Ship Operators' Association (became ERRVA in May 2000)
SSOG	solid-state optical gyro
SSPA	solid-state power amplifier
SSR	Sagnac sensing ring (of optical gyro) secondary surveillance radar
SSSI	Site of Special Scientific Interest
SST	satellite-to-satellite tracking sea surface temperature supersonic transport
SSTL	Surrey Satellite Technology Limited
St	stratus cloud
STABLE	Sediment Transport and Boundary Layer Equipment
Standard Time	The legally established time for a given zone
STAP	space-time adaptive processing (eg to produce CRPA)
STAR	Standard Terminal Arrival Route
STARS	Standard Terminal Automation Replacement System (FAA)
STC	Supplemental Type Certification (FAA for equipment upgrades)
STCA	Short-Term Conflict Alert (System) (used in ATC centres)

STCW	Standards of Training, Certification & Watchkeeping for Seafarers <i>Set in 1978 (STCW 78) and amended in 1995 (STCW 95).</i>
STDCDU	standard CDU
STDMA	self-organising time-division multiple-access
STEC	slant total electron content (of ionosphere)
STENAV	A Galileo simulation facility (space, ground segment & user
stick	LORAN-C transmitter (as opposed to a transmitter pair)
Stochastic	Governed by the laws of probability
STOWASUS	Storm, Wave and Surge (EU MAST IV project)
STP	standard temperature and pressure (=ISA)
STPM	synchronizer time-pulse modulator (Chayka)
Stratosphere	Part of atmosphere from ~ 14-50 km
STREP	Specific Targeted Research Project (EC FP6)
STREP	Specific Targeted Research Projects (EU FP6)
STRV	Space Technology Research Vehicle
STW	speed through water (speed of ship relative to the water surface) Standards of Training and Watchkeeping (IMO Sub-Ctee)
SUA	special use airspace
SUBC	self-unloading bulk carrier
SUCG	Scottish Users' Consultative Group (NLB)
SUP	south pole up (of a magnet)
Supplemental Means of Nav	<i>An approved system that can be used in conjunction with a Sole Means of Navigation.</i>
SURDOV	Joint UK-French project to share data between Dover and Gris Nez
SURNAV	Système français de comptes rendus de mouvements <i>French info and surveillance service for marine navigation.</i>
SUT	Society for Underwater Technology (UK)
SV	space vehicle (eg satellite) synthetic vision
SVD	singular value decomposition
SVFR	special visual flight rules
SVG	scalable vector graphics (eg for maps and charts)
SVGA	Standard display format of 800 x 600 pixels
SVID	space vehicle identifier
SVS	service volume simulation
SVS	synthetic vision system
SWEPOS	Swedish permanent national GPS network (24 stations)
SWL	safe working load
SXGA	Standard display format of 1,280 x 1,024 pixels

SXI	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>
systematic error	<i>An error which is non-random in the sense that it conforms to some kind of pattern (IMO).</i>
T	°True tera (SI unit multiplier of 10^{12}) tesla (magnetic flux density in Wb/m^2)
T&D	test and development
T&E	test and evaluation
T2CAS	Terrain & Traffic Collision Avoidance System <i>Uses GPS to give terrain avoidance as well as TCAS function.</i>
TA	timing advance (method of Cellphone positioning) traffic advisory (ACAS/TCAS I & II) traffic alert (ACAS/TCAS) transition altitude Type Approval
TAA	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
TACAN	TACTical Air Navigation <i>Military beacon system giving bearing and range.</i>
TACIS	Technical Assistance to the CIS (EU)
TADS	triple air data system
TAF	terminal aerodrome forecast
TAI	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'. $\text{TAI} = \text{Time (Loran)} + 10\text{s} = \text{Time (GPS)} + 19\text{s} = \text{UTC} + \text{LS}$.</i>
TAP-T	Telematics Application Programme - Transport Sector (EU)
TARSUS	Tactical Artillery Survey System (uses GPS)
TAS	true airspeed
TAT	total air temperature
TAWS	Terrain Awareness and Warning System
TB	true bearing (angular distance from TN to the object)
TBO	time between overhauls

TC	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)
TCA	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>
TCAA	Transatlantic Common Aviation Area
TCAR	three-carrier ambiguity resolution
TCAS	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>
TCC	Technical Co-operation Ctee (IMO) Traffic Control Centre (UK Highways Agency)
TCG	Training Consultation Group (EUROCONTROL)
TCH	threshold crossing height
TCN	terrain contour navigation
TCO	total cost of ownership
TCP/IP	Transmission Control Protocol/Internet Protocol
TCPA	target closest point of approach time to closest point of approach
TCS	track control system
TCu	towering cumulus cloud
TD	time difference
TDA	temporary danger area (ATC)
TDD	time division duplexing
TDEV	time deviation
TDF	two degrees of freedom
TDMA	time-division multiple-access
TDMS	Traffic Demand Management Strategy (UK DTLR)
TDOA	time difference of arrival
TDOP	time dilution of precision <i>The factor by which accuracy of receiver clock bias determination is degraded by geometrical considerations.</i>
TDP	touch-down point (landing aircraft)
TDS	Technology Demonstration Systems (Phase of GAGAN - to 2005)

TDWR	terminal doppler weather radar
TEC	total electronic content (typically of ionosphere) <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))
Tele-parking	Use of SMS to be remotely charged for parking
TELEPAY	EC project for innovative universal transport payment system (FP5)
TEMPO	temporarily (met)
TEN	Trans-European (Transport) Networks (EU)
TERNAV	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)
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>
TH-UWB	time-hopping UWB
THD	transmitting heading device

Thermosphere	Part of atmosphere from ~ 85-120 km
THLS	Trinity House Lighthouse Service (Corporation of Trinity House) <i>Covers England, Wales, Channel Islands and Gibraltar.</i>
THUCC	Trinity House User Consultative Committee
THUM	relative humidity
TIA	US Telecomms Standards Institute (equiv of Europe's ETSI)
TIBA	Traffic Information Broadcast for Aircraft
TID	travelling ionospheric disturbance
TIDE	Technology Initiatives for Disabled and Elderly People (EU)
TIFF	Tagged Image File Format <i>Standard for digital image compression; includes JPEG.</i>
TIGER	Traffic Information and Guidance on European Roads (EU DRIVE 2)
TIGNS	tightly-coupled (closed loop) IMU/GPS navigation system
TIH	Traffic Information Highway (carries data from TCCs)
TIS	traffic information service (air)
TIS-B	traffic information services - broadcast
TISPOL	European Traffic Police Association
TL	transition level until (met)
TLM	telemetry
TLS	target level of safety <i>EG for RVSM $TLS = 2.5 \times 10^{-9}$ fatal accidents per aircraft flight hour as a consequence of altimetry errors.</i> total least squares Transponder Landing System
TMA	terminal manoeuvring area (ATC) Traffic Management Advisor (ATC automation tool)(US)
TMAS	telemedical assistance service
TMC	Traffic Message Channel <i>Digital traffic messages carried by RDS.</i>
TMC Forum	EC forum to coordinate TMC activities (62 industry members in
TMG	track made good (true track between 2 fixes)
TMHD	transmitting magnetic heading device (maritime)
TMS	Testbed Master Station (GRAS)
TN	true north (northerly direction of the meridian)
TNAB	Telecomms & Navigation Advisory Board
TNSE	total navigation system error
TOA	time of arrival <i>In cellphone location could give accuracy of 125 m.</i>
TOC	time of coincidence (eg LORAN-C timing)

	time of computation
	top of climb
TOCI	time of coincidence interval (eg LORAN-C timing)
TOE	time of emission
TOGA	take-off and go-around (mode of autopilot)
TOID	Topographic Identifier (polygon features in OS MasterMap)
TOPS	Total Operations Processing System (for train movements)
TORA	take off run available
TORMES	System for visually impaired in cities (uses EGNOS & SISNeT)(Spain)
TORT	Generic legal term relating to breach of duty and liability.
TOT	time of transmission
TOW	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>
TP	Thematic Priority (EU FP6)
TPA	taxi position awareness (for aircraft)
TPAT	(C-TPAT) Trade Partnership Against Terrorism (US)
TPEG	Traffic Protocol Experts Group <i>A protocol for relaying traffic information. Used by DAB for in-vehicle systems.</i>
TQM	total quality management
TRA	temporary restricted area (ATC)
Trackstar	System for tracking stolen vehicles (RAC)
TRACON	Terminal Radar Approach Control
Trafficmaster	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>
TRAN	Terrestrial Regional Augmentation Network (EGNOS)
Transit	discarded US navigation satellite system
TRANSSC	Transport Safety Standards Committee (IAEA)
TRB	Transportation Research Board
TREN	(Directorate General) TRansport and ENergy (EC - was DG VII)
TRIDENT	EC project on data sharing for public transport information systems
trk	track
trkg	tracking
TRL	Transport Research Laboratory (UK)
TRN	terrain-referenced navigation
TROPIC	Traffic Optimisation by the Integration of Information & Control
TRS	Terrestrial Reference System

	Testbed Reference Station (GRAS)
TRSB	time-referenced scanning beam
TRUCE	Training for Unusual Circumstances and Emergencies (CAA)
true position	<i>The error-free latitude and longitude (2D) and height (3D) co-ordinates in a specified geodetic datum (IMO).</i>
TS	thunderstorm (met)
	Tracking Station (GPS)
TSA	target speed across track
	Transport Security Administration (US)
TSAS	Terminal Surveillance & Approach System (air)
TSCPTS	Traffic Signal Controller Performance Test System (UK DTLR)
TSD	traffic situation display (ADS-B)
TSE	total system error (also TNSE = total navigation system error)
TSL	target speed along track
	total signal loss (eg of GPS)
TSL/RD	total signal loss / route duration (% of route time that signal lost)
TSO	Technical Standard Order (US FAA or JAA as JTSO) <i>TSO C-129a covers certified avionics receivers.</i>
TSPI	time, space and position information
TSS	traffic separation scheme
Tsunami	Wave generated by seismic activity, seismic sea wave
TT	true track (actual path of (ship's) movement relative to the earth)
TT&C	telemetry, tracking and command
TTA	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>
TTC	Telemetry & Telecommand Station (Galileo)
	telemetry, tracking & command/control
TTEC	Transport Technology Ergonomics Centre (Loughborough University)
TTF	time to fix
TTFf	time to first fix
TTFU	time to first use
TTG	time to go
TTI	Tourist and Traveller Information
TTS	Transport Telematic System
TUEM	ATCOs' union in EUROCONTROL
TUNE	time component of the user navigation error
TVE	total vertical error

TVOR	terminal VOR (low-powered as an approach aid)
TWD	true wind direction
TWDL	two-way data link
TWG	Transport Council Working Group (EU)
TWP	Technical Work Programme (ICAO)
TWR	tower (air traffic control tower)
TWS	true wind speed
TWSTFT	two-way satellite and time frequency transfer
TWTA	traveling wave tube amplifier
Tx	transmitter
TXC	TransXChange <i>An XML schema for exchange of bus route & schedule data.</i>
TYRO	beginner or novice (used in ATC in emergency situations)
UAC	Upper Air Control
UACC	Upper Air Control Centre
UAIM	user autonomous integrity monitoring
UAIS	Universal Automatic Identification System (IMO MSC 74(69) Anx C)
UAR	upper air route
UAS	upper airspace service
UASRA	upper airspace special rules area
UAT	universal access transceiver
UAV	uninhabited/unmanned aerial vehicle
UB	unlit buoy
UBS	universal bulk ship
UCAV	unmanned combat air vehicle
UDA	upper advisory area
UDF	UHF direction finding
UDMS	Urban Data Management Society
UDP	User Datagram Protocol (Internet)
UDR	upper advisory route (ATC)
UDRE	user differential range error (eg in WAAS)
UE	user equipment
UERE	(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>
UHF	ultra high frequency (300-3,000 MHz)
UIC	Union Internationale des Chemins de Fer (based in Paris) <i>International Union of Railways.</i>
UIG	Urban ITS Group (UK DTLR)

UIR	Upper Information Region (FIR above FL245)
UIRE	user ionospheric range error
UITP	Union Internationale de Transport Public
UKAB	United Kingdom Airprox Board
UKF	unscented Kalman filter
UKHO	United Kingdom Hydrographic Office
UKISC	United Kingdom Industrial Space Committee <i>Sponsored by SBAC and INTELLECT.</i>
UKLFHB	UK Low Flying Handbook (military)
UKMF	UK Maritime Forum <i>Informal forum of ICS, IMarE, NI, RIN, RINA, and SUT.</i>
UKMO	UK Meteorological Office
UKOOA	UK Offshore Operators Association
UKSAR	United Kingdom Search & Rescue Committee
UKSCC	United Kingdom Satnav Co-ordination Committee
UKSON	UK Safety of Navigation (MCA Ctee)
ULBC	ultra large bulk carrier
ULCC	ultra large crude carrier
ULI	Research & Development Council for Land (Swedish AGI)
ULS	Up-Link Station (Galileo)
UML	Unified Modelling Language
UMRP	user minimum received power
UMS	Universal Measurement System (shipping)
UMTS	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>
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNE	user navigation error (may be horizontal UHNE or vertical UVNE) <i>Broadly equal to the constellation ranging error \times DOP.</i>
UNIGRACE	Unification of Gravity Systems in Central and Eastern Europe
UNISIG	Railway signalling & comms industry consortium
UNTOC	un-TOC second offset (LORAN-C)
UPS	uninterrupted power supply
UQ	ultra-quick flashing light
URA	user range accuracy <i>Prediction of max UERE (minus ionospheric error) broadcast in each GPS satellite's navigation message.</i>
URAV	unmanned reconnaissance air vehicle

URE	user range error (see UERE)
URL	Uniform Resource Locator (Internet address)
US	user segment
USB	Universal Serial Bus (computer connection at 12 Mbps - intro Jun 98)
USC	United States Code
USCA	ATCOs' union in Spain
USCAHC	US/Canada Hydrographic Commission
USCG	United States Coast Guard
USGIC	US GPS Industry Council
USGS	US Geological Survey
USNO	US Naval Observatory
USPA	user-specific performance analysis
USSPACECOM	US Space Command
UT	Universal Time user terminal
UT0	Uncorrected Universal Time
UT1	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>
UT2	UT0 corrected for polar & seasonal variations
UTC	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 ± 0.9 secs. GPS time differed by 13 leap seconds in Oct 2000, otherwise always within 100ns.</i> Universal Time Control (Galileo)
	urban traffic control
UTD	user terminal demonstrator (eg Galileo)
UTM	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>
UTMC	Urban Traffic Management and Control (DTLR 5-year R&D prog)
UTP	unshielded twisted pair (of wires carrying data) user terminal prototype (eg STENAV)
UUV	unmanned underwater vehicle
UWB	ultra-wide band (transmission - typically of GHz over short range)
V&V	verification and validation

VA	volcanic ash (met)
VAAC	Volcanic Ash Advisory Centre <i>Provides reports and forecasts of volcanic ash plumes.</i>
VADR	voice and data recorder (aircraft)
VAFORIT	Very Advanced Flight Data Processing OR Implementation System <i>German DFS contract.</i>
VAL	vertical alert limit/level (eg for WAAS precision approach etc)
VAMS	Virtual Airspace Modeling and Simulation (NASA/Boeing ATC)
VANESSA	Validation and ANalysis of EGNOS Signal within Swiss Airspace
Var	variation <i>Angle between TN and MN, from TN eastwards named E (+), westwards named W (-).</i>
VAS	value-added service
VASIS	Visual Approach Slope Indicator System
VASP	value-added service provider
VBA	vibrating beam accelerometer (for MEMS IMU)
VBM	Variable Butler Matrix (phase-shifters and amps, eg for jamming sim)
VBS	virtual base station
VC	in vacinity (met)
VCA	Vehicle Certification Agency (for EMC of vehicles)
VCASS	Visualisation-based Collision Avoidance Support System
VCR	visual control room (ATC)
VCS	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

VHF	very high frequency (30-300 MHz) (metric waves)
VHSIC	very high speed integrated circuit
VIC	Virtual Identity Card
VICS	Vehicle Information and Communications System (Japan)
VIKING	<i>1995 project to develop and coordinate traffic management & telematics schemes (Denmark, Finland, Norway, Sweden, N Germany.</i>
VIN	vehicle identification number
VIPS	Vessel Identification and Positioning System (US)
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)
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
VPL	vertical protection limit (WAAS) <i>Used by VAL in precision approach.</i>
VPL_{HO}	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)
VTMS	vessel traffic management service
VTs	vehicle traffic system
	vessel traffic service/system
VTsO	vessel traffic service operator
VTSS	vessel traffic separation scheme
VUNE	vertical component of the user navigation error
W	watt
W-Code	GPS encryption code to add to P-Code to create Y-Code
W/V	wind velocity
WAAS	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>
WAC	World Aeronautical Chart (1:1 million scale)
WACAF	Western and Central African Office (ICAO)
WACS	wireless airport communication system
WAD	wide-area differential
WADGPS	wide area DGPS
WAFC	World Area Forecast Centre (London [Exeter 2004] and Washington)
WAFS	World Area Forecast System (ICAO)
WAGE	Wide Area GPS Enhancement
WAH	when able higher (ATC)
WAN	wide area network (often joining together LANs)

WAP	wireless application protocol (rhymes with 'zap') <i>Specification to enable mobile phone, pager or PDA to access the Internet.</i>
WARC	World Administrative Radio Conference (now WRC)
Wb	weber (magnetic flux)
WBMOD	Wide-band Scintillation Model (for GPS)
WCS	Web Coverage Service (of OpenGIS Spec)
WCV	waypoint closure velocity
WDOP	weighted dilution of precision (see DOP)
WEEE	Waste from Electrical and Electronic Equipment (EC Directive)
WEND	Worldwide Electronic Navigational Chart Database (IHO)
WERD	Western European Road Directors
WETREP	Western European Tanker Reporting System (from July 2005?)
WFS	Web Feature Service (of OpenGIS Spec)
WG-GGI	Working Group on Geodesy and Geographic Information
WGS	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>
WiFi	a name for the 802.11 wireless interconnection standard
WIG	wing-in-ground craft
WIMP	windows, icons, mouse, pointer (describes windows style displays)
WIP	work in progress
WIPP	WAAS Integrity Performance Panel (US)
WL	water line
WLAN	wireless local area network
WLS	weighted least-squares
WMI	World Maritime Institute
WML	Wireless Markup Language (simplified HTML/XML for WAP etc)
WMO	World Meteorological Organisation
WMS	Web Map Service (of OpenGIS Spec) Wide Area Master Station (WAAS)
WMU	World Maritime University
WN	wavelet network (for modeling and predicting data) week number
WNTI	World Nuclear Transport Institute <i>Formed 1998, based in London, 36 member states in 2004. Dedicated to the safe, efficient and reliable transport of radioactive materials.</i>
WOW	weight on wheels
WpB	bearing of a waypoint

WpD	distance to waypoint
WPM	white phase modulation
WPT	waypoint
WRC	World Radio Conference (of the ITU) eg WRC-2000
WRDA	weapons range danger area
WRO1024	GPS week roll-over
WRS	Wide Area Reference Station (WAAS)
WSDL	Web Service Description Language (for OpenGIS)
WSN	Wide Space Network (comms links between satellites)
WSO	Weapons Systems Officer
WSSE	weighted sum of squared errors
WT	water track (path of ship's movement through the water)
	watertight
WTEMP	water temperature
WUL	worst user location (integrity check)
WV	water vapour
WWNWS	World-Wide Navigational Warning Service (IMO & IHO)
WWRNS	World-wide Radionavigation System <i>Described in IMO Res. A.815(19).</i>
www	World-wide Web (Internet)
Wx	weather
WX NIL	no significant weather
WYSIWYG	what you see is what you get
X-112	extended emergency phone call giving data alongside voice call
X-band	Old radar band 8-12 GHz (ITU assigned 8,500-10,680 MHz) ~ 3 cm
XAL	HAL or VAL
XGA	Standard display format of 1,024 x 768 pixels
XLRP	XML location reporting protocol
XML	Extensible Mark-up Language (complements HTML)
XTD	cross-track distance (perpendicular to ground track)
XTE	cross-track error (perpendicular to ground track)
Y-Code (P(Y))	encrypted P-Code (comprises modulo-2 addition of P-Code & W-Code)
Y2K	Year 2000
YAH	You are here (maps for pedestrians)
Z	zenith (point on the celestial sphere vertically overhead)
Z-Count	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>

ZD	zone description
ZLG	Zero-Lock Laser Gyro (2 laser gyros in one - Northrop Grumman)
ZT	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>
ZTD	zenith tropospheric delay
ZUPT	zero velocity update (of in-vehicle navigation system)
ZVU	zero velocity update
ZZKRL	ATCOs' union in Poland