

GNSS related links

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1. Introduction

This document reports a list of useful links to Web Sites where information on GNSS and specifically on EGNSS can be found.

Only official sources are reported, in order to provide a tool for enabling to find reliable and updated information.

2. Acronyms

| Acronym | Definition |
|---------|--|
| ACP | African, Caribbean and Pacific |
| AMC | Acceptable Means of Compliance |
| ANSP | Air Navigation Service Provider |
| ASECNA | L'Agence pour la Sécurité de la Navigation aérienne en Afrique et à Madagascar |
| ATM | Air Traffic Management |
| CEN | Comité Européen de Normalisation (European Committee for Standardization) |
| CENELEC | European Committee for Electrotechnical Standardization |
| CNS/ATM | Communications, Navigation, Surveillance and Air Traffic Management |
| CS | Certification Specifications |
| DG GROW | Directorate General for Internal Market, Industry, Entrepreneurship and SMEs |
| EASA | European Aviation Safety Agency |
| EC | European Commission |
| EGNOS | European Geostationary Navigation Overlay Service |

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| EGNSS | European GNSS |
| ENC | European Navigation Conference |
| ESA | European Space Agency |
| ESSP | European Satellite Services Provider |
| ETSC | European Telecommunications Standards Institute |
| EU | European Union |
| EUROCAE | EUROpean Organisation for Civil Aviation Equipment |
| FAA | Federal Aviation Administration |
| GLONASS | GLObal Navigation Satellite System |
| GM | Guideline Material |
| GNSS | Global Navigation Satellite Systems |
| GPS | Global Positioning System |
| GSA | European GNSS Agency |
| GSC | GNSS Service Centre |
| IAIN | International Association of Institutes of Navigation |
| ICAO | International Civil Aviation Organisation |
| ICG | International Committee on GNSS |
| IGS | International GNSS Service |
| IMO | International Maritime Organisation |
| ION | Institute of Navigation |
| ISO | International Standardization Organization |
| ITS | Intelligent Transport Systems |
| ITU | International Telecommunications Union |
| LBS | Location Based Services |
| MAGNIFIC | Multiplying in Africa European Global Navigation Initiatives Fostering Interlaced Cooperation |
| MEDUSA | MEDiterranean follow-Up for EGNOS Adoption |
| MKC | Maritime Knowledge Centre |
| OS | Open Service |
| RTCA | Radio Technical Commission for Aeronautics |
| SAFIR | Satellite navigation services for AFrican Region |
| SBAS | Satellite Based Augmentation System |
| SESAR | Single European Sky ATM Research |
| TREGA | Training EGNOS GNSS in Africa |
| UN | United Nations |
| UNOOSA | United Nations Office for Outer Space |
| US | United States |
| WAAS | Wide Area Augmentation System |

3. International GNSS, SBAS, technical information

| Source | Application/topic | Section of interest | Online link | Notes |
|---|-------------------|------------------------------------|---|--|
| United Nations Office for Outer Space (UNOOSA) | General | Documents and resolutions database | http://www.unoosa.org/oosa/documents-and-resolutions/search.aspx?lf_id= | The United Nations Office for Outer Space Affairs (UNOOSA) |
| United Nations (UN) International Committee on GNSS (ICG) | General | Resources | http://www.unoosa.org/oosa/en/ourwork/ork/icg/resources.html | The International Committee on GNSS (ICG) is an international forum, under UN aegis, of major importance, dealing with recommendation to guarantee the interoperability of GNSS systems. |
| | | Documents | http://www.unoosa.org/oosa/en/ourwork/ork/icg/documents.html | |
| US Government - Global Positioning System (GPS) | General | Multimedia | http://www.gps.gov/multimedia/ | |
| Russian GLObal NAVigation Satellite System (GLONASS) | General | Main page | https://www.glonass-iac.ru/en/index.php | From the Russian Federal Space Agency |
| Chinese BeiDou Navigation Satellite System (BeiDou) | General | Home page | http://en.beidou.gov.cn/index.html | From the China government |
| Navipedia - ESA | General | Main page | http://www.navipedia.net/index.php/Main_Page | GNSS encyclopaedia (Navipedia) made available by the European Space Agency (ESA) and including technical and operational information on all GNSS aspects. |
| International Civil Aviation | Aviation | Publications | http://www.icao.int/publications/Pages/default.aspx | The UN International Civil Aviation Organisation (ICAO) is the most important source of documents for the use |

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| Organisation (ICAO) | | | | of GNSS in aviation, covering all operational and normative aspects. |
| Federal Aviation Administration (FAA) | Aviation | Navigation Programmes | http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/ | The FAA is the US ANSP and Civil Aviation Authority and plays a major role as interlocutor for GPS related matters, and WAAS service provision. |
| International Maritime Organisation (IMO) | Maritime | Publications | http://www.imo.org/en/Publications/Pages/Home.aspx | The International Maritime Organisation (IMO) is a United Nations body (similar to ICAO) that provides information on GNSS requirements for maritime use in several applications and operational scenarios. |
| | | Maritime Knowledge Centre (MKC) | http://www.imo.org/en/KnowledgeCentre/Pages/Default.aspx | |
| International GNSS Service (IGS) | General | Publications | https://igscb.jpl.nasa.gov/overview/pubs.html | The International GNSS Service (IGS) is a voluntary federation of more than 200 worldwide agencies that pool resources and permanent GPS & GLONASS station data to generate precise GPS & GLONASS products. The IGS is committed to providing the highest quality data and products as the standard for Global Navigation Satellite Systems (GNSS) in support of Earth science research, multidisciplinary applications, and education. Currently the IGS includes two GNSS, GPS and the Russian GLONASS, and intends to incorporate future GNSS. |

4. European GNSS (Galileo and EGNOS)

| Source | Application/topic | Section of interest | Online link | Notes |
|---|-------------------|---------------------|---|---|
| European GNSS Agency (GSA) | General | Publications | http://www.gsa.europa.eu/communication/publications | The GSA's is an EU agency whose mission is to support European Union objectives and achieve the highest return on European GNSS investment, in terms of benefits to users and economic growth and competitiveness. |
| European Commission (EC) - DG GROWTH | General | Space | http://ec.europa.eu/growth/sectors/space/index_en.htm | The European Commission (EC) is the maximum authority and ultimate responsible of the EU GNSS programmes. In particular, DG-GROW as <i>programme manager</i> , provides valuable documentation on the EU GNSS programmes regulatory and planning aspects. |
| European Commission (EC) - EGNOS portal | General | Library | http://www.egnos-portal.eu/library | |
| European Space Agency (ESA) | General | Navigation | http://www.esa.int/Our_Activities/Navigation | The European Space Agency (ESA) (Design Authority for the EU GNSS systems under Delegation Agreement with the European Commission) provides general information on GNSS. |
| European Satellite Services Provider (ESSP) | General | Documentation | http://www.essp-sas.eu/ | The EGNOS services provider (ESSP), current contractor (under GSA contract) for EGNOS operation, maintenance and provision of services. It provides broad information on EGNOS. |
| European GNSS | General | Electronic | http://www.gsc-europa.eu/electronic- | The European GNSS Service Centre (GSC) is set to be |

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| Service Centre | | Library/ Programme Reference Documents | library/programme-reference-documents | an integral element of the European GNSS infrastructure and provides the single interface between the Galileo system and the users of the Galileo services. It provides relevant information and documentation about Galileo, as well as real time information on the system status. |
| European Aviation Safety Agency (EASA) | Aviation | Document library | https://easa.europa.eu/document-library | The European Aviation Safety Agency (EASA) is the EU authority for civil aviation providing safety oversight, it issues implementing rules, Acceptable Means of Compliance (AMC), Guideline Material (GM) and Certification Specifications (CS) for the use of GNSS based CNS/ATM systems and avionics. |
| EUROCONTROL | Aviation | Research & SESAR/ Navigation/ Infrastructure/ e/ GNSS | http://www.eurocontrol.int/articles/gnss | EUROCONTROL is an intergovernmental European organization devoted to the safety in the aviation domain. It provides relevant information and documentation for the use of GNSS in aviation. |
| | | Main page | http://www.skybrary.aero/ | EUROCONTROL has developed the “skybrary” a public consulting tool, very useful to find information about the use of GNSS in aviation and related matters. |

5. GNSS standardization

| Source | Application/topic | Section of interest | Online link | Notes |
|--|----------------------|---------------------|---|---|
| Radio Technical Commission for Aeronautics (RTCA) | Aeronautic standards | Publications | http://www.rtca.org/content.asp?pl=31&contentid=31 | The Radio Technical Commission for Aeronautics (RTCA) is currently the leading organization for the development of standards applicable to GNSS avionics. Chartered by the FAA to operate Federal advisory committees, RTCA employs a consensus-driven process to generate minimum performance standards for CNS/ATM systems and equipment; to forge recommendations on key aviation policies, and identifying and developing mitigation on issues affecting air traffic management operations. |
| European Organisation for Civil Aviation Equipment (EUROCAE) | Aeronautic standards | Publications | https://www.eurocae.net/publications/ | The European Organisation for Civil Aviation Equipment (EUROCAE) plays the role of European equivalent RTCA counterpart. |
| International Telecommunications Union (ITU) | General | Publications | http://www.itu.int/en/publications/Pages/default.aspx | The International Telecommunications Union (ITU) is the United Nations specialized agency for information and communication technologies. It has a significant role in providing standards and technical guides for signal transmission, including spectrum allocation. It considers GNSS signals. |
| European Telecommunications Standards Institute (ETSI) | General | Standards | http://www.etsi.org/standards | The European Telecommunications Standards Institute (ETSI), produces globally-applicable standards for Information and Communications Technologies (ICT), including fixed, mobile, radio, converged, broadcast and Internet technologies. It is officially recognized by the |

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| | | | | European Union as a European Standards Organization. |
| European Committee for Standardization (CEN) and European Committee for Electrotechnical Standardization (CENELEC)- CEN-CENELEC | General | Main page | http://www.cencenelec.eu/ | European Committee for Standardization (CEN) and European Committee for Electrotechnical Standardization (CENELEC)-CEN-CENELEC. It is officially recognized by the European Union as a European Standards Organization. In particular, the CEN-CENELEC Technical Committee 'Space' (CEN/CLC/TC 5 is expected to finalize a European Standard that will enable the monitoring and management of road transport systems using a global navigation satellite system (GNSS) such as 'Galileo'. The new European Standard (EN 16803-1) to be published by CEN and CENELEC in 2015 will address the use of GNSS-based positioning for road Intelligent Transport Systems (ITS), and 'definitions and system engineering procedures for the establishment and assessment of performances' in particular. This standard, which has been developed on the basis of contributions from leading experts in the fields of GNSS and ITS, will facilitate interoperability among different system implementations in different countries. |
| International Standardization Organization (ISO) | General | Main page | http://www.iso.org/iso/home.html | The International Standardization Organization (ISO) is an independent, non-governmental international organization with a membership of 162 national standards bodies. It is the main global standardization organization. |

6. GNSS news and bulletins publication

| Source | Application/topic | Section of interest | Online link | Notes |
|---|-------------------|----------------------------|---|---|
| European GNSS Agency (GSA) | General | GSA Today | http://www.gsa.europa.eu/subscribe-gsa-today | There is an available bulletin for EGNSS Galileo and EGNOS news at GSA Today. It is released bimonthly with the latest news, events and opportunities in the European GNSS world. |
| European Satellite Services Provider (ESSP) | General | ESSP News | http://www.essp-sas.eu/news | |
| European Space Agency (ESA) | General | ESA official news for GNSS | http://www.esa.int/Our_Activities/Space_News | |
| | | ESA bulletin | http://www.esa.int/About_Us/ESA_Publications/ESA_Publications_Bulletin | |
| Federal Aviation Administration (FAA) | Aviation | FAA official news for WAAS | http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/waas/news/ | |

7. GNSS related conferences and events

| Source | Application/topic | Name of the event | Online link | Notes |
|--------------------------------------|-------------------|-------------------------|---|-------|
| European Satellite Services Provider | General | EGNOS service provision | http://egnos-user-support.essp-sas.eu/new_egnos_ops/?q=content/service- | |

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| (ESSP) | | yearly workshop | provision-workshop | |
| European GNSS Agency (GSA) | General | Space Solutions Conference | http://www.european-space-solutions.eu/ | |
| International Association of Institutes of Navigation (IAIN) | General | European Navigation Conference | http://www.iainav.org/ | |
| Institute of Navigation (ION) | General | ION GNSS+ Meeting | http://www.ion.org/gnss/index.cfm | |
| World ATM congress | Aviation | World ATM congress | http://www.worldatmcongress.org/ | |

8. International EGNSS

| Source | Region/area | Section of interest | Online link | Notes |
|--|-----------------------|---------------------|---|---|
| MEDUSA | Euromed countries | eLibrary | http://galileo.cs.telespazio.it/medusa/public/ | The MEDUSA eLibrary contains all the publicly available documents produced in the course of the project life-time. |
| SAFIR | African ACP countries | Home page | http://aviation-africa.eu/safir | The SAFIR (Satellite navigation services for African Region) project is funded by the European Commission through the 10th EDF Intra-ACP envelope, with the objective of building capacity within African ACP countries for the future deployment of GNSS/EGNOS in the region. |
| Galileo Information Centre for Latin America | South America | Home page | http://www.galileoic.org/ | The Centre is a focal point in the region and aims to disseminate information about EGNOS and Galileo to increase awareness among main actors around GNSS in the region such as decision makers, investors, institutions, regulators, industries, service and data providers and final users. |
| NAVIS centre | South East Asia | Home page | http://navis.hust.edu.vn/index.php | The Navis Centre, established with a project co-funded by the European Union, through the collaboration among European and Asian partners focuses on research and development of satellite navigation technology, in South-East Asia. |

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| MAGNIFIC | Africa | Home page | http://www.magnific-gsa-project.eu/ | <p>The objective of MAGNIFIC (Multiplying in Africa European Global Navigation Initiatives Fostering Interlaced Cooperation) is the promotion of an African EGNOS and of the Galileo Early services through EGNSS awareness.</p> <p>The market sectors of MAGNIFIC covers strategic domains including the export of EGNOS for Africa and key priority applications identified in the GSA Action plan on GNSS applications: road, aviation, maritime, precision agriculture/environment protection, civil protection and surveillance, and LBS.</p> |
| GNSS.asia | Asia | Home page | http://www.gnss.asia/ | <p>GNSS.asia, financed under Horizon 2020, has the objective to develop and implement GNSS industrial cooperation activities between the GNSS industry in Europe and Asia-Pacific, focusing on the downstream sector (applications and receivers).</p> |
| European Position Determination System | GNSS Augmentation | Home page | http://eupos.org/ | <p>EUPOS is a ground based European regional GNSS augmentation system.</p> |
| ASECNA. ANSP and EGNSS | Sub-Saharan Africa | Publications | http://www.asecna.aero/index.php/publications-media/actualite/a-la-une/167-programmEGNSS-egnos-galileo | <p>The Agency for Aerial Navigation Safety in Africa and Madagascar (L'Agence pour la Sécurité de la Navigation aérienne en Afrique et à Madagascar, ASECNA) is an air traffic control agency based in Dakar, Senegal.</p> |



MEDUSA is part of the Euromed GNSS II project, funded by the European Commission in the frame of the Euromed Transport programme, whose objective is to extend/exploit the use of EGNOS in the Euromed countries (Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria and Tunisia).

Running from mid-2012 up to the end of 2015, MEDUSA was led by Telespazio (Italy) and supported by a team of EU experts. MEDUSA assisted the Euromed countries in the introduction and adoption of EGNOS primarily for transport applications, through the direct involvement of the relevant public decision-makers and main stakeholders from the aviation and non-aviation sectors.