

CENELEC

European Space Standardization

How standards support space applications for Europe

Standardization and the space industry

The space environment leaves no room for chance when it comes to developing equipment and other imperative products that allow the ability to journey into the unknown regions of space. Standards play a paramount role in the assembly, manufacturing, and operation of these products, by ensuring a high-quality of production with controlled cost and interoperability. Space standards were first developed by both industry and the cooperation of international and national agencies. Since 1947, international standard organizations like ISO, ASD STAN (1970) and CCSDS (1982) played a pivotal role in establishing the framework for these standards.

In 1995, by strong request of the European industry leaders, the European Space Agency (ESA) and some of its member states, created the European Cooperation for Space Standardization (ECSS), a partnership between the agencies and the industry, to develop space standards for use in business agreements. By July 2009, with anticipation of the provision of the Lisbon treaty (2009), mandate M/496 was generated. This mandate required the European Standardization Organizations (CEN, CENELEC and ETSI) to develop a set of coherent space standards. Once the organizations accepted the mandate, CEN and CENELEC established the CEN-CENELEC/Joint Technical Committee 5 'Space' (JTC 5), to be led by ECSS as a representative. In May 2013, CEN, CENELEC and ECSS signed a Memorandum of Understanding, to which all ECSS standards were transformed into European Standards (ENs).



Harmonized European Standards (hENs)

A harmonized standard is a European Standard developed by and recognised by the three European Standardization Organization: CEN, CENELEC, or ETSI, following the request from the European Commission to one of the above organizations.

Manufacturers, other economic operators, or conformity assessment bodies, can use harmonized standards to demonstrate that products, services, or processes comply with relevant EU legislation. Standards are voluntary, there is no automatic legal obligation to apply them.

CEN-CENELEC/JTC 5 'Space'

The CEN-CENELEC/JTC 5 'Space' develops European Standards to support the implementation of EU-level space projects.

CEN-CENELEC/ JTC 5 'Space' covers all Standardization activities in CEN and CENELEC related to space, including dual-use aspects, systems of systems, as well as upstream and downstream applications.



Britta Schade

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Chair of JTC 5 'Space'**

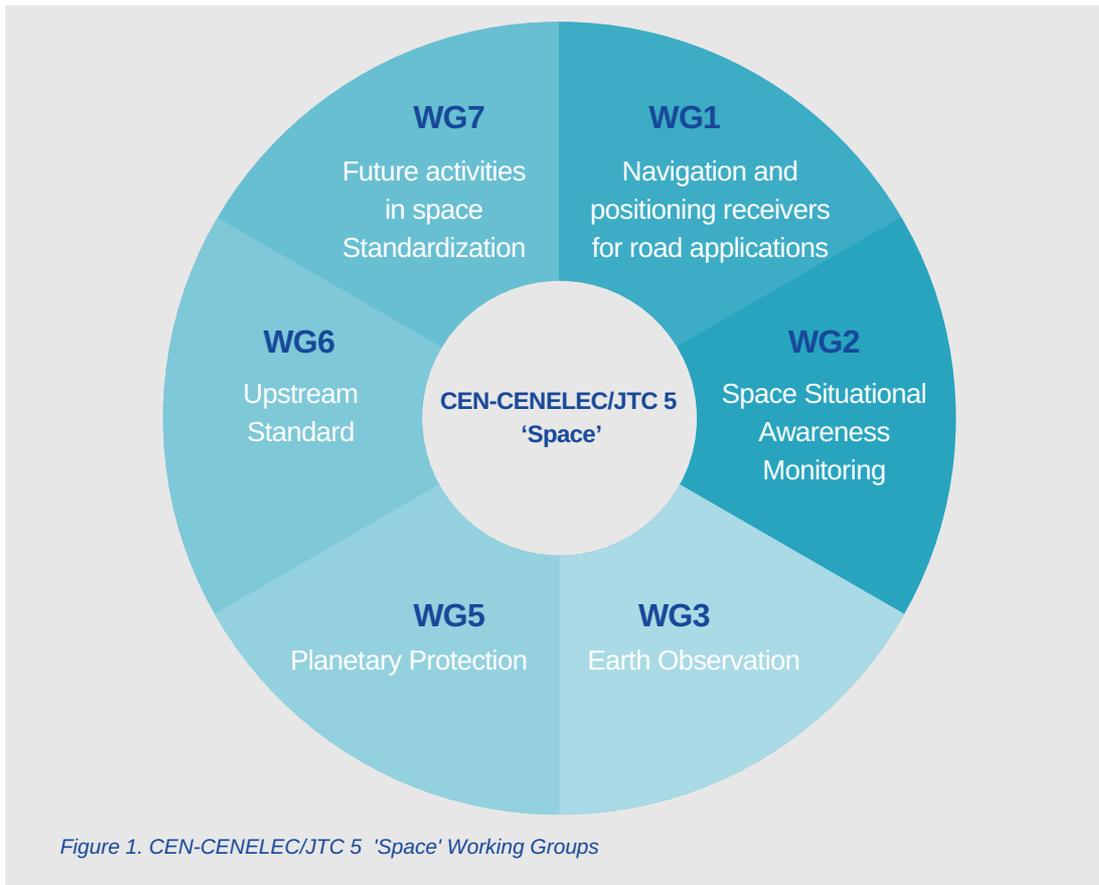
"The CEN-CENELEC/JTC 5 'Space' activities encompass the production of upstream and downstream standards. The upstream standards focus on developing and operating space systems (ECSS).

The Earth Observation downstream standards relate to the grand-scale use of available EO-satellite data, for the benefits of the Earth citizens in the areas of resources and disaster management, meteorology, and climate monitoring.

The Navigation downstream standards focus on the utilisation of the GNSS signals for automobile, maritime and aircraft management. The downstream standards related to Space Situation Awareness enable the protection from space environmental threats (e.g. meteoroids, space weather and space debris)."

Working groups of CEN-CENELEC/JTC 5 'Space'

A Working Group (WG) is established by a Technical Committee or a Subcommittee, to undertake a specific short-term task within a target date. Each Working Group is in charge of drafting the different categories of standards. CEN-CENELEC/JTC 5 'Space' is currently divided into six working groups, WG4 has been disbanded in 2014.



Categories of Standards

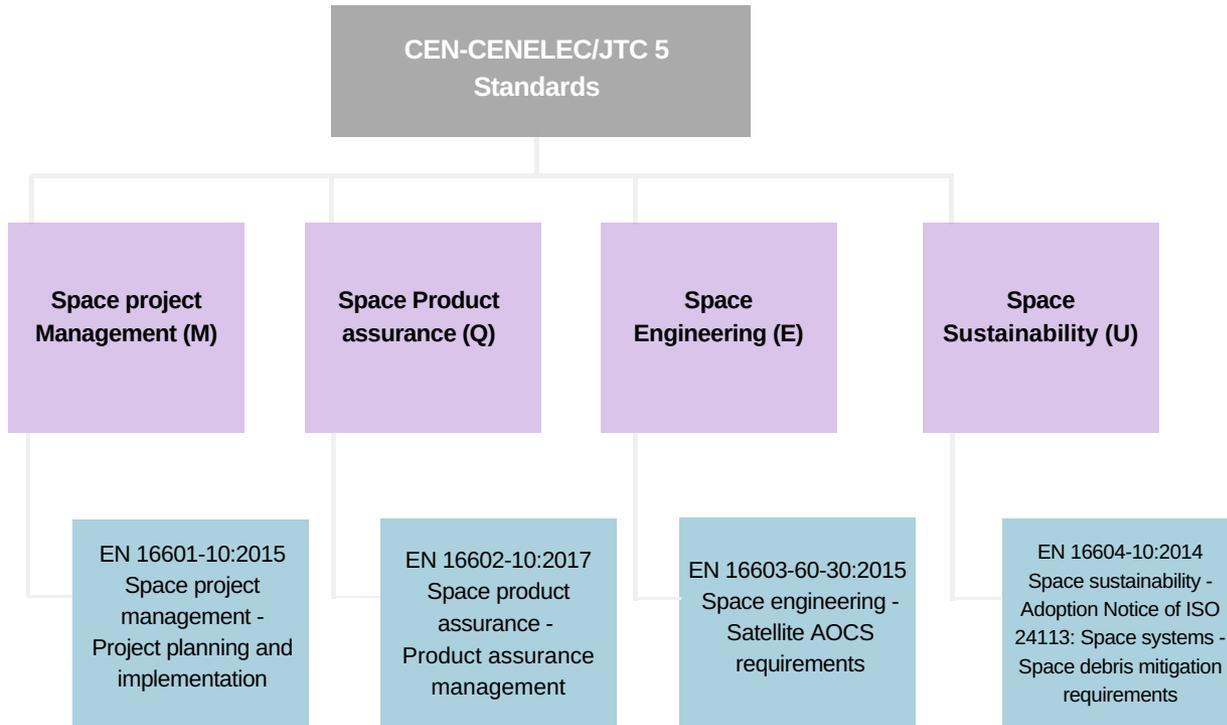


Figure 2. Document structure of CEN-CENELEC/JTC 5 'Space' and examples of published standards.

Next steps of CEN-CENELEC/JTC 5 'Space'

The first stage of CEN-CENELEC/JTC 5 'Space' focused on developing a series of European Standards (ENs). In the upcoming years, CEN-CENELEC/JTC 5 'Space' will develop a series of Handbooks (Technical Reports), that explain and provide guidance on

previously published standards in order to clarify their implementation. These reports are non-normative documents that will provide background information, orientation, advice and/or recommendations on subjects and topics addressed in the standards.

Downstream Data

Standardization, in particular the one addressed at JTC 5 - WG1 on Navigation & Positioning receivers for road applications, has several objectives. The first is to provide a reliable, representative and affordable testing methodology for GNSS-based positioning systems. One strength of the EN16803 series is that it allows GNSS systems to be compared

with each other in the laboratory with an ultra-accurate representation of reality. This is thanks to the "record and replay" method, which allows a car or a system manufacturer to choose the best GNSS receiver for the intended final application. In the case of regulatory critical applications, this type of standard helps to define the type approval process.

Benefits of European Standards for the Space industry

- Achievement of more cost-effective space projects;
- Improvement of their quality and safety;
- Facilitation of clear, formal and unambiguous communication between all parties within the customer-supplier chain;
- Minimization of risks with proven and consolidated techniques, processes, methodologies and interfaces;
- Guaranteed interoperability and interface compatibility;
- Reduction of costs, as standardization spreads the investment across different space missions and requires less expensive verification/testing campaigns.

About CEN and CENELEC

CEN (European Committee for Standardization) and CENELEC (European Committee for Electrotechnical Standardization) are recognized by the European Union (EU) and the European Free Trade Association (EFTA) as European Standardization Organizations responsible for developing standards at European level, as per the EU Regulation 1025/2012. The members of CEN and CENELEC are the National Standardization Bodies and National Electrotechnical Committees of 34 European countries. European Standards (ENs) and other standardization deliverables adopted by CEN and CENELEC, are accepted and recognized in all of these countries. European Standards (ENs) contribute to enhancing safety, improving quality, facilitating cross-border trade and strengthening the European Single Market. They are developed through a process of collaboration among experts nominated by business and industry, research institutes, consumer and environmental organizations, trade unions and other stakeholders. CEN and CENELEC work to promote the international alignment of standards in the framework of technical cooperation agreements with ISO (International Organization for Standardization) and the IEC (International Electrotechnical Commission).

How to get involved

Participation in the standardization process allows stakeholders to have a say on the content of draft standards and enables them to be better informed about developments in standards relevant to their area of interest or sector of activity. Companies, public bodies and other (national) organizations, wishing to participate in CEN activities should contact the CEN Member (National Standardization Body - NSB) or CENELEC Member (National Committee - NC) in their country. By contacting the NSB or NC, these organizations can either participate in the national mirror committee responsible for providing input to the relevant Technical Committee (TC) at European level, or be put forward by their NSB/NC to be an active member of a European Standardization Committee/Working Group.

A full list of CEN Members can be found at: www.cen.eu ;

CENELEC Members at: www.cenelec.eu.

European or international organizations and other stakeholders wishing to participate in standardization activities at European level may apply to become a Partner or Liason Organization of CEN and/or CENELEC.

For more information, please contact: partners@cencenelec.eu

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