BUSINESS PLAN

CEN-CENELEC/TC 5
Space

1 BUSINESS ENVIRONMENT OF CEN-CENELEC/TC 5

1.1 Description of the Business Environment

The following political, economic, technical, regulatory, legal, social and/or international dynamics describe the business environment of the space sector, products, materials, disciplines or practices that may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards.

Space systems and space-based technologies have an essential influence on the daily life of all European citizens and businesses. From telecommunications to television, weather forecasting to global financial systems, from navigation to earth observation, for emergency and disaster detection, assessment and related preventive and rescues actions, as well as for telemedicine and many others, most of the key services that we all take for granted in the modern world depend on space in order to function properly. In the future the utilisation of space products will become even more important. Improved positioning and timing systems along with global environmental monitoring will offer new opportunities and services for business as well as for citizens. The functioning, exploitation and further development of all these systems can be introduced and guaranteed by the availability of well proven European space related standards to support the use of space data and products by European space industries, national and European organizations and institutions.

In line with the Lisbon treaty that established the key role the European Union has to have in the space domain, the European Commission issued the Mandate M/415 in June 2007 addressed to CEN, CENELEC and ETSI to propose a work program in the field of space standards. The three European Standardization Organisations agreed to allocate the leading role to CEN that created the CEN/BT/WG 202 „Space“. The implementation of the mandate was carried out in two phases:

- In Phase 1, existing space standards and entities were identified, and sectors with standardization needs were proposed;
- In Phase 2, a standardization work program has been identified in form of 10 sectorial dossiers (see Table 1).

As a follow-up of that work, the European Commission issued Mandate M/496 in September 2011 addressed to CEN, CENELEC and ETSI to develop standardization regarding space industry (phase 3). Mandate M/496 is drawn up under and in line with the European Space Policy which will pave the way for the integration of space systems in Europe. The European Space Policy requests the development of standards required to support European policies and future European (or global) legislation.

This Mandate M/496 establishes a standardization program that is based on the ten sectorial dossiers defined in Phase 2 of Mandate M/415 with the objectives to:

- support the international competitiveness of the European space industry;
- foster European projects like Galileo, the Global Monitoring for Environment and Security (GMES), the satellite telecommunications and Earth Observation fields;

- stimulate the emergence of European new markets, services and end-user terminals;
- ensure assurance and resilience of space hardware and services in Europe;
- enabling interoperability between new and existing space products and services
- increase the synergy between civil and military applications and programmes;
- support the European Space Situational Awareness activities;
- expand international cooperation.

and with the request to implement the Mandate with the following priorities:

- pursue the achievement of the European navigation satellite programmes Galileo and EGNOS;
- implement with Member States the European Earth Monitoring Programme (GMES) which is designed for land, ocean, atmosphere, air quality and climate change monitoring, as well as emergency response and security, with the objective to become fully operational from 2014;
- protect space infrastructures against space debris, solar radiation and asteroids by setting-up a European Space Situation Awareness (SSA) system;
- identify and support actions at EU level in the field of space exploration;
- pursue a space industry policy developed in close collaboration with the European Space Agency (ESA) and Member States;
- support research and development to increase European technological non-dependence and ensure that innovation in this field will be of benefit to non-space sectors and citizens;
- strengthen the partnerships with EU Member States and the European Space Agency (ESA) and implement improved management schemes.

CEN-CENELEC and ETSI responded independently and positively to the EC accepting the mandate M/496. To implement the mandate, CEN-CENELEC created the Joint Technical Committee CEN-CENELEC/TC 5 „Space“ while ETSI, in view of the area they considered under their field of expertise, has assigned the task to their TC-SES (Technical Committee: Satellite Earth Stations and Systems).

Recognizing the key role ECSS plays in the space segment area and in particular on the production and maintenance of the „upstream standards“ for the design, production, test, launching and operation of space objects and systems, CEN-CENELEC have offered to ECSS the chairmanship of CEN-CENELEC/TC 5. ECSS accepted. This guarantees coherence and consistency with the ECSS standards already produced and currently used by the space community and that will be transferred into EN Standards as requested by the Mandate M/496.

It was jointly agreed by CEN-CENELEC and ETSI to create a Coordination Group (CG) that will ensure coordination and harmonisation of the respective activities.

To fulfil the requested standardization work it is essential to involve the widest possible range of interested European stakeholders in the standardization work. Therefore, recognising the specificity of the space business environment not only the National Standardisation Bodies (NSB) but also multinational European organisations will be invited to collaborate.

The Mandate M/496 requested the establishment of a „Space Monitoring Working Group“ to include representatives of the European Commission and the European community of manufacturers, operators and users of space products. This request is fully satisfied by the establishment of the Coordination Group which will ensure consistency of the work within the ESOs in order to avoid duplication and conflict and ensure that the work plan and its progress are presented to a large audience including the European Commission and the European community of manufacturers, operators and users of space products for advice and guidance.

1.2 Quantitative Indicators of the Business Environment

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the TC.

The space industry is an important part of the business world with about 35 000 people directly employed in Europe's space industries and further 250 000 people employed in Europe's space related areas. The European Space Industry achieved an annual turnover of 6 146 million Euro in 2010, which represents an increase of 43 % over the last twenty years[1].

The European Space Agency (ESA) and the European National Space Agencies are also putting a significant amount of financial and work resources in the definition and implementation of space technological research and products. The commercial market linked to broadcast, internet and services related to and/or depending on space data or products constitute a significant amount of the commercial and financial European market.

A significant amount of resources from universities and research institutions are also allocated to utilise space data and/or studying future applications of space systems and products.

As example:

- A part of the standardization request relates to the Global Navigation Satellite System (GNSS) Galileo. With its constellation of up to 30 satellites, Galileo will allow to pinpoint a location with accuracy. It is expected that the Galileo system will create more than 100 000 jobs and generate some 90 billion Euros during the first 15 years of operation.

- To prevent the Earth from unexpected environmental problems or threats from space and to ensure a life as we know it, it is a necessity to broaden our knowledge of the blue planet and the region of space surrounding planet Earth. Therefore the Global Monitoring for Environment and Security program (GMES), the Space Situational Awareness (SSA) and Earth Observation (EO) systems were and are being developed, those systems also relate to a part of the standardization work of CEN-CENELEC/TC 5.

2 BENEFITS EXPECTED FROM THE WORK OF CEN-CENELEC/TC 5

CEN-CENELEC/TC 5 has been established to develop in liaison and collaboration with ETSI and the European space community a *single* set of user-friendly European standards for use in all space-based terrestrial/ground associated applications and systems as well as for space segment development, test, launch and operation.

The work of the TC as a part of the European Space Policy will help to achieve a set of standards which are capable of implementation on existing and future space projects and activities such as:

- Global Navigation Satellite System (GNSS)
- Global Monitoring for Environment and Security (GMES)
- Space Situational Awareness (SSA)
- Telecommunications (TEL)
- Earth Observation (EO)
- etc.

[1] http://www.eurospace.org/FANDF2010/eurospace_f_and_f_2011web.pdf

The main benefits of the work of the TC are related to trends in the business, technological, environmental and social environment of the space field and aim to:

- lead to cost savings through implementation of space standards;
- eliminate technical barriers to trade and open markets in Europe;
- promote, facilitate, support the implementation and operations of existing and new space based services
- address relevant social, safety or environmental concerns;
- facilitate the harmonization of national and regional standards;
- support the implementation of other European standards.

3 PARTICIPATION IN CEN-CENELEC/TC 5

All the CEN and CENELEC national members[2] are entitled to nominate delegates to CEN-CENELEC Technical Committees[3] and experts to Working Groups[4], ensuring a balance of all interested parties. In the TC, it is allowed to send only one delegation per country with representatives appointed by the members of CEN and CENELEC in that country. The participation of national organizations/entities in the activities of CEN-CENELEC/TC 5 should be channelled through the National Standardization Bodies (NSB). ECSS participation is also confirmed.

CEN-CENELEC/TC 5 will also ask for and will promote the participation of multi-national entities and organizations who can significantly contribute to the development of the standards, in particular of those recommended in the sectorial dossiers of the CEN/BT/WG 202 final report. The nomination of representatives/experts of organizations that do not fall under a NSB's responsibility (e.g. ESA) will be endorsed at TC 5 level and formalized by the CEN-CENELEC Management Centre (CCMC).

4 OBJECTIVES OF CEN-CENELEC/TC 5 AND STRATEGIES FOR THEIR ACHIEVEMENT

4.1 Defined objectives of CEN-CENELEC/TC 5

The work of CEN-CENELEC/TC 5 as requested by Mandate M/496 and based on the CEN/BT/WG 202 final report of Phase 2 will be to elaborate a set of EN Standards for the space industry.

The objectives of CEN-CENELEC/TC 5 are:

- to establish a detailed work programme and plan for the development of European Standards with critical reassessment of the 10 sectorial dossiers (see Table 1) of the CEN/BT/WG 202 based on users, technologies and market needs and trends
- to analyse all existing ECSS standards and ECSS standards in production for the integration in the EN system by publishing them as European Standards (as single sources for upstream standards).
- to contribute to or draft standards concerned with Navigation and Positioning (NP) Receivers for Road Applications and Airport Services;

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[2] National members of CEN-CENELEC are the National Standardization Bodies (NSB), such as AFNOR, BSI, DIN etc.

[3] The NSBs are nominating the national delegates to the Technical Committee meetings.

[4] Working Groups comprise of individual experts who are nominated by the mirror committees in their respective countries. Ideally, their opinions should reflect the view of their national mirror committee.

- to draft standards concerned with Integration of Navigation and Positioning (NP) Applications with Telecommunications (TEL);
- to draft standards concerned with Information Exchange, including Data Format, in support of applications defined in a "System of Systems" environment (in particular inside and between Earth Observation (EO), Navigation and Positioning (NP), and Telecommunications (TEL));
- to draft standards concerned with Interoperability and Integration of Mobile Satellite Systems (MMS) and Fixed Satellite Systems (FSS) with Terrestrial Systems in particular Next Generation Networks (NGN), and with Global Navigation Satellite Systems (GNSS) in particular Galileo;
- to contribute to preparatory activities and draft standards concerned with Space Situational Awareness (SSA);
- to draft standards concerned with Dual-Use ground segment interfaces in Earth Observation (EO);
- to contribute to or draft standards concerned with Disaster Management;
- to draft standards concerned with Payload Interfaces for launchers.

All above taking into account other national and international standardization activities (e.g. ISO/TC 20/SC 13 and SC 14) to achieve a maximum of harmonization, to avoid any duplication and to support a global approach (e.g. on SSA, disaster management, planetary protection, etc.).

4.2 Identified strategies to achieve CEN-CENELEC/TC 5's defined objectives

Within Mandate M/496, there is a clear priority for the work of CEN-CENELEC/TC 5 to address the following areas:

- publication of existing ECSS standards as European standards (Upstream standards)
- Galileo and GMES;
- civil-military synergies;
- dual-use ground segment interfaces in Earth Observation;
- satellite telecommunication;
- disaster management.

To fulfil the first objective, CEN-CENELEC/TC 5 will work closely together with ECSS, recognized as the prime and single partner of CEN and CENELEC in the area of standards for design, development, production, testing, launching and operation of space and ground associated systems and products (defined as space upstream standards). To this end, a collaboration agreement (Memorandum of Understanding) between ECSS and CEN-CENELEC is in signature.

CEN-CENELEC/TC 5 will also work closely together with other European bodies involved in the development and/or utilization of space standards. This will include liaisons with different committees from CEN, CENELEC (like CEN/TC 278 „*Road transport and traffic telematics*“ and CEN/TC 287 „*Geographic Information*“) and ETSI, relevant international committees like ISO/TC 211 „*Geographic information/Geomatics*“ as well as the widest possible range of interested parties in Europe.

Especially a close co-operation with ETSI will be ensured to agree the sharing of work and responsibilities at level of Sectorial Dossiers so to avoid duplication and to guarantee coherence of work related to Mandate M/496. CEN-CENELEC/TC 5 and ETSI have agreed to set up a Coordination Group (CG) that will ensure the coordination and harmonisation of the respective activities and outputs and the use of technical inputs and expertise of both parties during work execution.

Close cooperation is also planned with ASD-STAN, which is drafting standards proposed for „Aerospace“ field of application. In this frame the suitability to the „Space“ domain will be reviewed

and approved by CEN-CENELEC/TC 5 and consequently the „Aerospace“ label will be confirmed or modified into „Aeronautic“.

As requested by the Mandate M/496, CEN, CENELEC and ETSI will propose to the EC the Terms of Reference for the creation of a Space Standardization Monitoring Group. This is to involve and gather feedback/guidance by the largest possible European community involved in the production or application of space data and products.

Main participation to this Monitoring Group will include representatives, preferrably at executive level, from the European Commission (EC), European Space Agency (ESA), European Defence Agency (EDA) European Committee for Standardization (CEN), CENELEC, ETSI, ECSS, and Eurospace. This Monitoring Group will follow and monitor the activities within the CEN-CENELEC/TC 5 and ETSI related to the execution of the Mandate M/496 to guarantee receiving the views and needs of the users of space standards, to account for and coordinate with the activities, work and standards done by other entities and/or organisations.

As a first step, CEN-CENELEC/TC 5 initiates Working Group(s), whose first task will be to critically review and, where found necessary, to revise the program of work as identified in the sectorial dossiers of Phase 2 of CEN/BT/WG 202 accounting for users, technologies and market needs and trends and in line with Mandate M/496. This (these) Working Group(s) will be requested to identify all the standards needed to be developed in each sectorial dossier, to establish a detailed program and plan of work, to propose the leadership for each Working Group and to identify the expertise needed for the development of the individual standards. In doing this exercise, the Working Group(s) shall directly or with the support of CEN-CENELEC/TC 5 involve to the highest possible degree all existing experts/groups/organizations in the different technological fields covered by the sectorial dossiers.

In parallel and during this exercise, CEN-CENELEC/TC 5 will kick-off the Working Group(s) to develop the EN standards that CEN/CLC/TC 5 will agree are ready to be started.

Table 1 presents the current preliminary assignment of leading role and organization for the 10 sectorial dossiers of CEN-CENELEC/TC 5 and ETSI.

4.3 Environmental aspects

CEN-CENELEC/TC 5 supports the efforts of CEN Environmental Help Desk. In implementation of Mandate M/496, attention will be given to environmental aspects associated with the application of space standards. CEN-CENELEC/TC 5 will make use of all relevant and known information on environmental aspects, including CEN Guide 4 „*Guide for addressing environmental issues in product standards*“.

A priority in the work of CEN-CENELEC/TC 5 is the development of standards relating to the Global Monitoring for Environment and Security (GMES). GMES is an initiative of the European Commission and the European Space Agency and aims to collect information obtained by satellites, air and ground stations to provide a comprehensive picture of the state of the Earth world. This will help to understand how our planet and the climate are changing and how it will influence our all lives. With the development of GMES-standards, CEN-CENELEC/TC 5 supports the Policymaker to set up an appropriate environmental legislation and policies that contribute to the health of the planet and its inhabitants. The same can be said for the subject of planetary protection and Space Situational Awareness CEN-CENELEC/TC 5 is dealing with.

5 FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF CEN-CENELEC/TC 5 WORK PROGRAMME

Resources and motivation of all interested stakeholders are crucial factors for the implementation and particularly for the completion of the requested standardization program.

The following factors could negatively impact the completion and use of the CEN-CENELEC/TC 5 committee's standards:

- expert resources are not sufficiently available for certain projects;
- specific expertise for a project is lacking, which could affect the project’s development;
- late delivery of results of pre-normative research for certain projects;
- overlap with the interest or the work of other bodies;
- impossibility of reaching consensus on the subject due to conflict of interest by various stakeholders;
- lack of involvement /interest by the space user community.

Furthermore it was already reported to the EC when accepting the mandate, that some of CEN-CENELEC/TC 5 outputs could be in the form of Technical Specifications instead of European Standards. This is to shorten and simplify the CEN-CENELEC/TC 5 process of publication.

Sectorial Dossiers of the former Working Group CEN/BT/WG 202 "Space"	
1	Navigation and positioning (NP) receivers for road applications and airport services
2	Integration of navigation and positioning (NP) applications with telecommunications (TEL)
3	Information exchange, including data format, in support of applications defined in a "System of systems" environment (in particular inside and between Earth Observation (EO), navigation and positioning (NP) and telecommunications (TEL))
4	Interoperability and integration of Mobile Satellite Systems (MMS) and Fixed Satellite Systems (FSS) with terrestrial systems in particular Next Generation Networks (NGN), and with Global Navigation Satellite Systems (GNSS) in particular Galileo
5	Planetary protection
6	Space Situational Awareness (SSA) monitoring
7	Dual use ground segment interfaces in Earth Observation (EO)
8	Interfaces toward Earth Observation (EO) downstream services, persistent test bed, conformance testing and fast take up measure for EO standards
9	Disaster Management
10	Payload interfaces for launchers

Resulting Working Groups		dealing with Dossier
WG 1	Navigation and positioning receivers for road applications	**1**
WG 2	Space Situational Awareness (SSA) monitoring	**6**
WG 3	Earth observation	**7, 8**
WG 4	Payload interfaces for launchers	**10**
WG 5	Planetary protection	**5**
ETSI/TC-SES	Integration of navigation and positioning (NP) applications with telecommunications	**1, 2, 4**
ETSI/TC-SES	Disaster management	**9**

Table 1 – Sectorial Dossiers and their allocation to ETSI and CEN-CENELEC/TC 5 Working Groups (at the moment, there is no need for standardization activities regarding Sectorial Dossier 3)