

TERMS OF REFERENCE

**for the Development of the Central Electoral Commission
Official Website
(<http://www.cec.md>)**

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Introduction

This document contains the Terms of Reference intended for the development of a new version of the *Central Electoral Commission (CEC) Official Website*. In the meanwhile, given the significant period since the time when the current version of the CEC Official Website was implemented and commissioned, a series of legislative initiatives have occurred; changes in the terminology have been operated, and objective needs of Website actors have emerged, which cannot be met through minor adjustments of the website. To this end, the overall change of the website <http://www.cec.md> paradigm and development architecture is required.

The IT solution designed and developed shall provide dynamic and accessible resolution enabling the overall management of the Website: from the structure to the content, in an exclusively visual and dynamic manner, having ensured integration means through WEB services, which would allow for automatic updating of some sections of the currently operated IT subsystems within the *Central Electoral Commission* or to be further developed.

To this end, it is appropriate to design and develop a *Content Management System* accessible to the users who have computer operation knowledge and skills (*Microsoft Windows, Microsoft Office, Microsoft Internet Explorer, Mozilla FireFox, etc.*).

Hence, it would be enough for the person responsible for managing the Website content and structure to have regular computer skills: *MS Office* and basic use of Internet.

The User Interface shall be developed in three linguistic versions: Romanian, English and Russian. The CEC Website Administrator will have the possibility to edit the interface messages and the Website information content in all linguistic versions.

The CEC Website public interface accessible to general public will be compatible with the most popular Internet browsers: *Microsoft Internet Explorer, Mozilla FireFox, Opera, Google Chrome, and Safari*. The Website will have an identical appearance for all browsers mentioned above.

The provided IT solution shall comply with the requirements referred to in the basic regulations currently in force in the Republic of Moldova:

- *Technical Regulation "Software Life Cycle Processes" RT 38370656-002:2006*; Official Gazette No 95-97/335 of 23 June 2006;
- *Government Decision No. 188 of 03 April 2012 on official web pages of public administration authorities in the Internet* (for the IT system public interface).

Full account shall also be taken of international recommendations in the area of WEB application development, such as:

- *World Wide Web Consortium (W3C) Recommendations* (<http://www.w3c.org>) on the quality of web page content, possibilities to view the information correctly by the commonly used Internet browsers and compatibility with different IT platforms;
- *WAI (Web Accessibility Initiative) Recommendations* (<http://www.w3c.org/WAI>) on ensuring the possibility for people with disabilities to use the site resources;
- *WCAG (Web Content Accessibility Guidelines) Recommendations* <http://www.w3.org/TR/WCAG20/>;
- *W3C Recommendations* (<http://validator.w3.org>) on WEB page testing. All WEB pages shall be tested as per these Recommendations.

The Website www.cec.md aims to enhance transparency of the overall CEC activity and of each CEC unit in particular (citizens will be able to access public information and contact directly the CEC responsible staff), as well as the performance of all CEC units.

These Terms of Reference present a conceptual vision on the CEC Official Website upgrade and operation, including aspects on the main goal and objectives, principles, basic features, functionality and conceptual architecture, and IT system functional, technical and platform requirements.

1. General Information

The CEC Official Website represents an IT solution, which pursues the main goal to ensure transparency of CEC activity through efficient dissemination of public interest information and receiving all requests sent by Moldovan citizens and Internet Users.

The current version of the CEC Website was developed and commissioned in 2013 by SoE “MoldData”, and put into operation in 2014. Although the CEC Official Website is based on an IT solution that manages complex data structure, its advantages are mitigated by the User Interface and obsolete design.

Likewise, the current version of the CEC Website does not take into account the latest trends in the WEB technologies and design, which, at first sight, creates the illusion of a simplistic WEB solution and makes the exploration of the Website information cumbersome.

The Website <http://www.cec.md> would have gained should an interface and ergonomic and intuitive information structure be implemented. In light of the national and international field-related regulations, the following shortcomings of the CEC Official Website can be identified:

- graphical design typical to the trends of 2005-2010;
- cumbersome, non-intuitive public User Interface with limited ergonomics;
- lack of public interface version of the Website <http://www.cec.md> suitable for mobile devices and tablets;
- faulty navigation mechanism, which is composed of myriads of references in the left and central part of the Website, which does not allow to find the necessary information in a fast way;
- there is no possibility for the people with disabilities to use the CEC Official Website resources;
- there are difficulties in searching the CEC decisions and other content information, etc.

Taking into account the new WEB technologies and the challenges to be surmounted by the *Central Electoral Commission* it becomes imperative to upgrade the CEC Website and pursue the following priority actions:

- designing and implementing a new version of the CEC Official Website based on edge-cutting technologies accepted in this area;
- publishing the relevant information aimed at promoting the CEC activity;
- ensuring access and facilitating the retrieval of information in the CEC field of activity, aligned with the Moldovan citizens' needs;
- automatic acquiring of public information related to the CEC activity from other CEC IT subsystems;
- increasing the efficiency of disseminating the information and documents related to CEC activity;
- ensuring reverse links/feedback with citizens, CPA and LPA on CEC activity;
- ensuring some high-performance facilities for dynamic administration and development of CEC Official Website;

- ensuring control over the users' access to data and ensuring accuracy and security of data published on the CEC Official Website.

To ensure meeting the above listed objectives, the CEC Official Website shall contain:

- basic information in this area;
- copies of documents, publications and detailed information related to CEC activity;
- Multimedia information relevant for this area (*in JPEG, PNG, GIF, EPS, Flash Video, MP3, MPEG, AVI, Quicktime, and WMV format*);
- textual information relevant for this field of activity (*in HTML, PDF, DOC/DOCX, XLS/XSLX, OOD, OOS, and ZIP format*);
- means for information collection in this area, including questions, unclear aspects, opinions of field-related professionals and of population;
- references to other Web pages containing useful field-related information.

The CEC Website services would be useful for: citizens of the Republic of Moldova, Mass-media, Central and Local Public Authorities, public institutions, etc.

1.1. Terms Used in the Terms of Reference

All the acronyms and abbreviations used in this document are specified in Table 1.1.

Table 1.1. Abbreviations and acronyms used in this document t

| No. | Abbreviation/Acronym | Description |
|-----|----------------------|--|
| 1. | CPA | Central Public Administration |
| 2. | LPA | Local Public Administration |
| 3. | DB | Database |
| 4. | KPIs | Key performance indicators |
| 5. | OLAP | <i>Online analytical processing</i> (real time analytical processing) is a method of information processing that contains mechanisms for defining and dynamic retrieval of reports. |
| 6. | CEC | Central Electoral Commission |
| 7. | DBMS | Database Management System |
| 8. | ITS | IT System |
| 9. | IT | Information technology |
| 10. | ICT | Information and Communication Technology |
| 11. | TLS/SSL | The TSL Protocol or its predecessor, SSL Protocol are cryptographic protocols that grant secure communication between two nodes of a computer network for such actions as visiting of Web pages, e-mail, Internet-fax, exchange of instant messages and other transfers of data. |

The definitions and terms frequently used in this document are presented and explained in Table 1.2.

Table 1.2. Definitions and terms used in the document.

| No. | Abbreviation/Acronym | Description |
|-----|--|---|
| 1. | Database | A collection of data organized as per the design structure describing the basic characteristics and relation amongst entities. |
| 2. | Credentials | A set of symbols that establish the Users' and systems identity and authentication within information systems. |
| 3. | OLAP Cube | A wealth of data organised and structured in a hierarchical and multidimensional order. Unlike the relational databases, the <i>OLAP Cube</i> is a multidimensional logical model, which can have myriads of dimensions and levels of data. |
| 4. | Data | Elementary information units about people, subjects, facts, events, phenomena, processes, objects, situations, etc. presented in a way that enables their notification, commenting and processing. |
| 5. | Personal Data | Any information referring to an identified or identifiable natural person (subject of personal data). To this end, an identifiable person is the one who can be identified, directly or indirectly, in particular, through referring to an identification number or to one or more specific elements describing the person physical, physiological, psychical, economic, cultural or social identity. |
| 6. | Electronic Document | Electronic information that has been created, structured, processed, stored, conveyed via a computer, other electronic devices or software and hardware, signed with a digital signature. |
| 7. | Data Integrity | Data status when they maintain their content and are interpreted unambiguously in cases of random actions. It is deemed that the data maintained their integrity if they have not been altered or deteriorated (deleted). |
| 8. | Logging | A function of recording the information on events. The records about events entered into the information systems include details about the date and time, User, and action carried out. |
| 9. | Metadata | The way of assigning semantic value to the data stored in the database (data about data). |
| 10. | Information Object | Virtual representation of the existing tangible and intangible entities. |
| 11. | Information Resource | Set of documentary information in the computer system, maintained as per the requirements and legislation in force. |
| 12. | IT System | All software and hardware units that ensure data automatic processing (the automated component of the information system). |
| 13. | Information System | An information processing system along with the associated organisational resources such as human and technical resources, which provide and disseminate the information. |
| 14. | Information and Communication Technology | Common term that includes all technologies used for information exchange and processing |
| 15. | Data truthfulness | The extent to which the data stored in the computer memory or in documents correspond to the real status of the field-related objects |

| No. | Abbreviation/Acronym | Description |
|-----|----------------------|-------------------------|
| | | mirrored in those data. |

1.2. References and Legal Aspects for the CEC Official Website Development

The legal basis to underpin the development of a new version of the CEC Website comprises the national legislation in force, the international treaties and the European and international recommendations in this area.

The creation and operation of the CEC Official Website is governed by the following legal acts:

1. *Electoral Code of the Republic of Moldova*, adopted on the basis of Law No. 1381 of 21 November 1997, Official Gazette No. 81 of 08 December 1997.
2. *Law No. 101 of 15.05.2008 on the Concept of the State Automated Information System "Elections"*, Official Gazette No 117-119 of 04 July 2008.
3. *CEC Decision No. 1347 of 10.07.2012 adopting the Regulation on the manner of publishing and updating the information materials on the CEC Official Website.*
4. *CEC Decision No. 4080 of 29.09.2015 adopting the Regulation on using the CEC corporate symbols.*
5. *Standard of the Republic of Moldova SMV ISO CEI 15288:2009 "Systems and Software Engineering. System life-cycle processes".*
6. *Technical Regulation "Software life-cycle processes" RT 38370656-002:2006*; Official Gazette No. 95-97/335 of 23 June 2006.
7. *Law No. 467-XV of 21.11.2003 on Computerization and State Information Resources*, Official Gazette No. 6-12/44 of 01/01/2004.
8. *Law No. 91 of 29.05.2014 on Electronic Signature and Electronic Document*, Official Gazette No. 174-177 of 04.07.2014.
9. *Law No. 133 of 08.07.2011 on Protection of Personal Data*, Official Gazette No. 171-175 of 14.10.2011.
10. *Law No. 1069-XIV of 22.06.2000 on Informatics*, Official Gazette No. 073 of 05.07.2001.
11. *Law No. 982-XIV of 11.05. 2000 on Access to Information*, Official Gazette No. 88 art. No. 664 of 28.07.2000.
12. *Law No. 239 of 13.11.2008 on Transparency in Decision-making*, Official Gazette No. 215-217 of 05.12.2008.
13. *Government Decision No. 1123 of 14.12.2010 on approving the Requirements for the assurance of personal data security during their processing within the information systems of personal data*, Official Gazette No. 254-256 of 24.12.2010.

14. *Government Decision No. 7104 of 20.09.2011 on approving the Strategic Programme for Governance Technological Upgrading (e-Transformation)*, Official Gazette No. 156-159 from 23.09.2011.
15. *Government Decision No. 128 of 20.02.2014 on Joint Governmental Technological Platform (MCloud)*, Official Gazette No. 47-48 of 25.02.2014.
16. *Government Decision No. 656 of 05.09.2012 approving the Programme on Interoperability Framework*, Official Gazette No. 186-189 of 07.09.2012.
17. *Government Decision No. 1090 of 31.12.2013 on Governmental electronic service for authentication and control of access (MPass)*, Official Gazette No. 4-8 of 10.01.2014.
18. *Government Decision No. 708 of 28.08.2014 on Governmental electronic service for logging (MLog)*, Official Gazette No. 261-267 05.09.2014.

To conceptualize and develop the CEC Official Website it is appropriate to implement the principles outlined in the following international guidelines and recommendations:

- Michael O. Leavitt, Ben Shneiderman, *Research-Based Web Design & Usability Guidelines*, U.S. Government Printing Office, https://www.usability.gov/sites/default/files/documents/guidelines_book.pdf
- *World Wide Web Consortium (W3C) Recommendations* (<http://www.w3c.org>) on the quality of web page content, possibilities to view the information correctly by the commonly used Internet browsers and compatibility with different IT platforms;
- *WAI (Web Accessibility Initiative) Recommendations* (<http://www.w3c.org/WAI>) on ensuring the possibility for people with disabilities to use the site resources;
- *WCAG (Web Content Accessibility Guidelines) Recommendations* (<http://www.w3.org/TR/WCAG20/>)
- *W3C Recommendations* (<http://validator.w3.org>) on WEB page testing. All WEB pages shall be tested as per these Recommendations.

1.3. Basic Principles of the CEC Official Website

Upon designing, developing and implementing the CEC Official Website full account shall be taken of the following general principles:

- **Principle of dividing the architecture by levels:** consists in designing independently the components of the CEC Official Website according to standards of interface between the levels;
- **Principle of complying with open standards:** implies the exclusive adoption of open standards intended for conceptualising and operation of the CEC Official Website in line with the field-related international recommendations and practices for the publication, communication, interoperability and definition of the Metadata system of the CEC Official Website;
- **Principle of legality:** implies the creation and operation of the CEC Official Website in accordance with the national law in force and the relevant internationally recognized norms and standards;

- **WYSIWYG** (*what you see is what you get*) **principle**: is a system in which content (text and graphics) can be edited in a form identical or closely resembling its appearance when printed or displayed as a finished product on the Website;
- **Principle of reliable data**: provides the input and access of data related to the CEC Official Website via authorized and authenticated channels only;
- **Principle of information security**: implies a proper level of integrity, selectivity, accessibility and effectiveness to secure data against losses, alterations, damages and unauthorized access;
- **Principle of accessibility to public information**: implies the implementation of procedures of ensuring the Moldovan citizens' access to the public information provided by the CEC Official Website;
- **Principle of transparency**: requires the design and implementation of CEC Official Website according to the modular principle, using transparent standards of information and telecommunications technologies;
- **Principle of expansibility**: stipulates the possibility of extension and completion of the CEC Official Website with new functions or improvement of the existing ones;
- **Principle of priority of first person/single centre**: implies the existence of a senior responsible person with sufficient rights to make decisions and coordination of activities to create and operate the CEC Official Website;
- **Principle of scalability**: implies the provision of a constant performance of an IT solution upon the increase in the amount of data and request of the CEC Official Website.
- **Principle of integration with the existing systems**: means the possibility for the IT solution to be integrated in and interact with the IT systems available at CEC and, where necessary, with the platform services *MCloud* or with the Governmental Interoperability Platform;
- **Principle of simplicity and convenience of use**: implies the design and implementation of all applications, hardware and software resources available to the CEC Official Website, based exclusively on visual, ergonomic, logical and intuitive principles from the conceptual perspective.
- **Principle of interface tailoring according to the users' preferences**: means the interface conceptualisation in such a way so that it could adjust to particular configurations of the device used to access the CEC Official Website (design responsive or adjusted to special needs of Internet Users).

In particular, for the IT system architecture the following major principles shall be complied with:

- implementation of a client-server multilevel SOA-based solution;
- development of an IT solution based on portable software solutions;
- provision of adequate security of the system to protect the information and component subsystems against their unauthorized use or disclosure of classified information;

- ensuring the possibility for facile integration of the front-office interface of electronic services furnished by the IT systems deployed within the CEC (*for example, the Platform for generating the analysis reports, FB “Documentation”, Rotation, etc.*);
- development of WEB services that grant the possibility to interact with external IT systems;
- minimizing the number of different technologies and products that offer the same or similar functionality as per their destination;
- development of a high-performance solution for the retrieval of information published in the CEC Official Website content based on the provision of some users’ intuitive guiding principles for fast retrieval of relevant information and formulation of suggestive global search query, which would take account of the Romanian, Russian and English morphology;
- ensuring appropriate speed for processing users’ requests;
- ensuring disaster recovery ability (ensuring the IT solution physical security) as part of the implementation plan.

1.4. Purpose, Objectives and Tasks of the CEC Official Website

Upgrading the CEC Official Website (<http://www.cec.md>) shall enable the alignment of this solution with the field cutting-edge trends and will be aligned with the latest changes of the SA/SE.

In light of the above, a series of benefits are expected to occur following the implementation and operation of the IT system:

- improving the CEC activity efficiency and transparency;
- aligning the Website with the field-related national and international requirements;
- enhancing the CEC Website ergonomics and the User Interface;
- automating the processes of information publication and dissemination;
- excluding the redundancy of information production and dissemination processes (once some information is keyed in the CEC IT system, it should be automatically posted on the CEC Official Website);
- reducing the time and costs incurred for managing the Website content;
- indexing the full content of the CEC Official Website (<http://www.cec.md>);
- ensuring fast and accurate retrieval of documents and information published on the CEC Official Website;
- ensuring access to public information through WEB services furnished by the IT systems operated by CEC;
- generating reports, statistics and KPIs related to the CEC Official Website information content;
- ensuring feedback from citizens, CPA and LPA on CEC activity (gathering online suggestions, questions, complaints/petitions from the population, etc.);

- ensuring the CEC Official Website networking via automatic interaction with the most popular social networks in the Republic of Moldova (*LinkedIn, Facebook, Twitter, Odnoklassniki*, etc.);
- furnishing an efficient tool for analytical report generation about the CEC Official Website functioning.

The development and implementation of a new version of the CEC Official Website shall contribute to the development of CEC institutional capacity to promote and fulfil the citizens' rights and access of CEC authorised users to:

- public information;
- decision-making process.

The CEC Official Website will allow reducing the time required to find, view and retrieve the relevant documents related to CEC activity. This objective will be attained through automated processes of collecting, processing, publishing and disseminating the content information, including through the integration of services provided by other CEC IT subsystems.

Among the direct Beneficiaries of the Website www.cec.md one could find:

- Citizens of the Republic of Moldova;
- Mass-media;
- CEC employees;
- CPAs;
- LPAs;
- Researchers in the electoral area.

2. Parties Involved and Roles of the CEC Official Website

2.1. Business Roles of the CEC Official Website

The following entities are interested or must be involved in the process of development or operation of the CEC Official Website:

- **Central Electoral Commission** as a permanent public authority established to implement the electoral policy for proper organisation and conduct of elections. The CEC mission is to create optimal conditions for all Moldovan citizens to freely exercise their constitutional voting right and to be elected in free and fair elections. The CEC is responsible for the administration and operation of the Website <http://www.cec.md>.
- **The UNDP Project “Enhancing Democracy in Moldova through Inclusive and Transparent Elections”** as the institution that will finance and monitor the development and implementation of the Website <http://www.cec.md>.
- **eGovernment Center** as a body empowered to develop and implement the policy of *e-Transformation* in the Republic of Moldova and *MCloud* (if the Website will be hosted by *MCloud*).
- **Internet Users** as direct beneficiaries of the CEC Official Website content (<http://www.cec.md>).

2.2. CEC Official Website Possessor

The official Website Possessor is the *Central Electoral Commission*. The role of system Possessor reflects the administrative aspect that is related to the CEC competences required for the administration and ongoing development of the Website.

As the Possessor of the CEC Official Website, the *Central Electoral Commission* will be able to assign roles and rights of access to the user interface and data to its employees, depending on their job duties.

2.3. CEC Official Website Owner

The Owner of an IT solution reflects the technological aspect related to the CEC competence over the IT system. In this case, the technological aspect of the CEC Official Website will be administered by the Division *IT and Voters’ Lists Management*.

It could be the case that the CEC Official Website would be hosted outside the CEC Data Centre. *MCloud* could be a solution to this end (the Owner’s role belongs to the SOE “*Centre for Special Telecommunications*”).

2.4. CEC Official Website Purchaser

The CEC Official Website will be purchased by the *UNDP-Moldova Project “Enhancing Democracy in Moldova through Inclusive and Transparent Elections”*. As a Purchaser, the *UNDP Project “Enhancing Democracy in Moldova through Inclusive and Transparent Elections”* jointly with the CEC Division *IT and Voters’ Lists Management* will supervise the activities carried out with the aim to design and implement the CEC Official Website.

2.5. CEC Official Website Administrator

The CEC Official Website administration will be split between *the System Administrator* (employee of the *Division IT and Voters' Lists Management*) for the system part and *the Content Administrator* (employee of a CEC subdivision responsible for the preparation and placement of content information on the CEC Official Website) for the Website content (www.cec.md).

The System Administrator has full access to all system functionalities, files and databases related to the system, software applications that ensure the CEC Official Website data security.

The responsibilities of *the CEC Official Website System Administrator* are as follows:

- to ensure proper operation of the IT system, granting data accessibility, security and integrity;
- to monitor the users' activity in the system;
- upon the CEC decision-makers' request, to operate changes in the functionalities provided by the CEC Official Website (to the extent allowed by the IT solution), etc.;
- to perform technical administration of the CEC Official Website infrastructure.
- to manage the content and Metadata of the Website www.cec.md.

2.6. Users and their role within the CEC Official Website

Human roles or other systems that interact with the CEC Official Website are displayed in Figure 2.1.

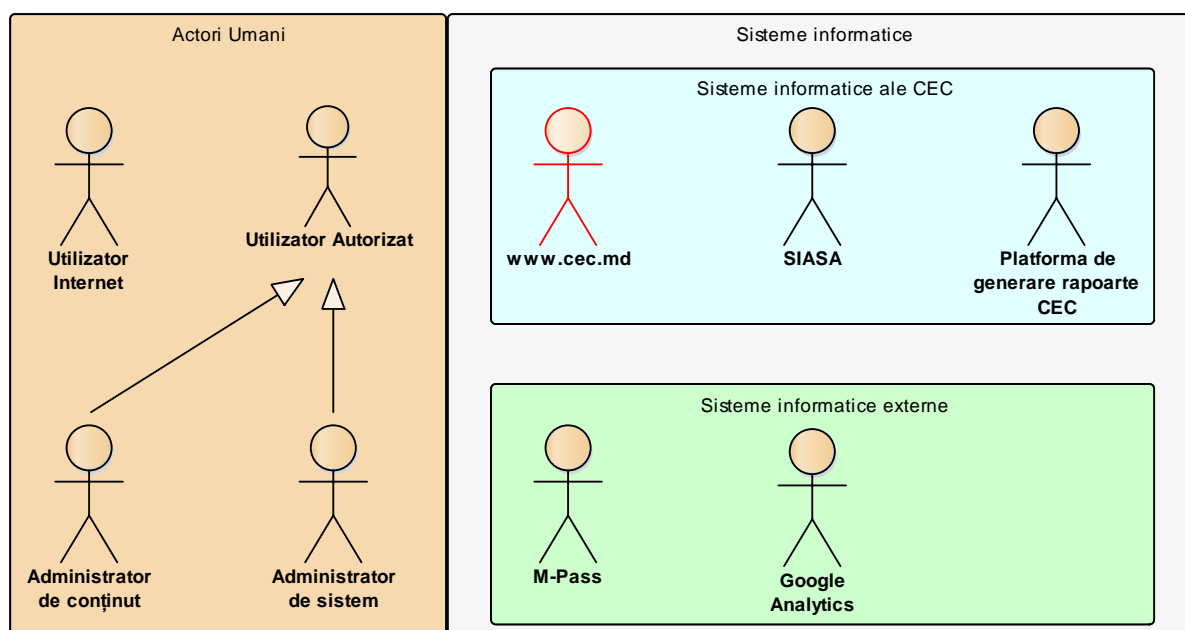


Figure 2.1. Actors of the CEC Official Website.

Internet User – a human actor who accesses the CEC WEB public interface to explore the public information published on the CEC Official Website. These actors have the following distinct roles:

- to access the CEC Official Website *in order* to view and download public documents;
- to navigate through the content of the CEC Official Website;

- to place comments to the documents published on the CEC Official Website;
- to send requests to CEC responsible people;
- to retrieve reports and statistics containing public information.

Content Administrator – a human actor empowered with the rights to manage the CEC Official Website content. Such actors shall have the following distinct roles:

- to access all functionalities available to *Internet Users*;
- to use unconditionally all functionalities for the administration of the CEC Official Website content;
- to administer the content of the Website <http://www.cec.md> categories for which *the System Administrator* has defined access;
- to handle comments and messages received by *CEC* from *Internet Users*.

System Administrator – a human actor empowered with the delineation of the Website users, configuration of <http://www.cec.md>, as well as with the administration of functional components of the Website. If the technological environment where the CEC Official Website is operated includes sufficient capacities to carry out administration works, then their implementation in the system is optional. Such actors shall have the following distinct roles:

- to use unconditionally all functionalities of the IT system;
- to view any record contained in the database;
- to configure the structure, operation parameters and rules for presenting the CEC Official Website;
- to administer the database in production;
- to administer users' profiles;
- to administer the system of nomenclatures and Metadata;
- to make backups for the database;
- to monitor the users' activity and behaviour.

www.cec.md – the CEC Official Website, which is the development and implementation subject of this document.

SAISE represents the IT subsystems of *the State Automated Information System "Elections"* that would display public information produced by business processes implemented under the public interface sections of the CEC Website. *SAISE Admin* is one of the key subsystems for the implementation of functionalities aimed to manage the roles and users, authenticate/authorise the users, notify the users and ensure business events logging.

The Platform for generating CEC analysis reports represents a platform that would display public reports produced during the electoral processes. In addition, it would be the case to integrate the OLAP solution of this platform to generate public data analysis cubes.

MPass is a *MCloud* platform service used to implement the procedures for user's authentication on the basis of electronic signature.

Google Analytics is an external IT system used to collect statistics and generate reports and *KPIs* on the popularity of public components of the CEC Official Website and its specific details.

3. CEC Official Website Architecture

3.1. CEC Official Website Components

The CEC Official Website functionality implies the interaction of a series of components and actors showed in Figure 3.1 (having disregarded the CEC Official Website connections with external IT systems for data delivery /receipt).

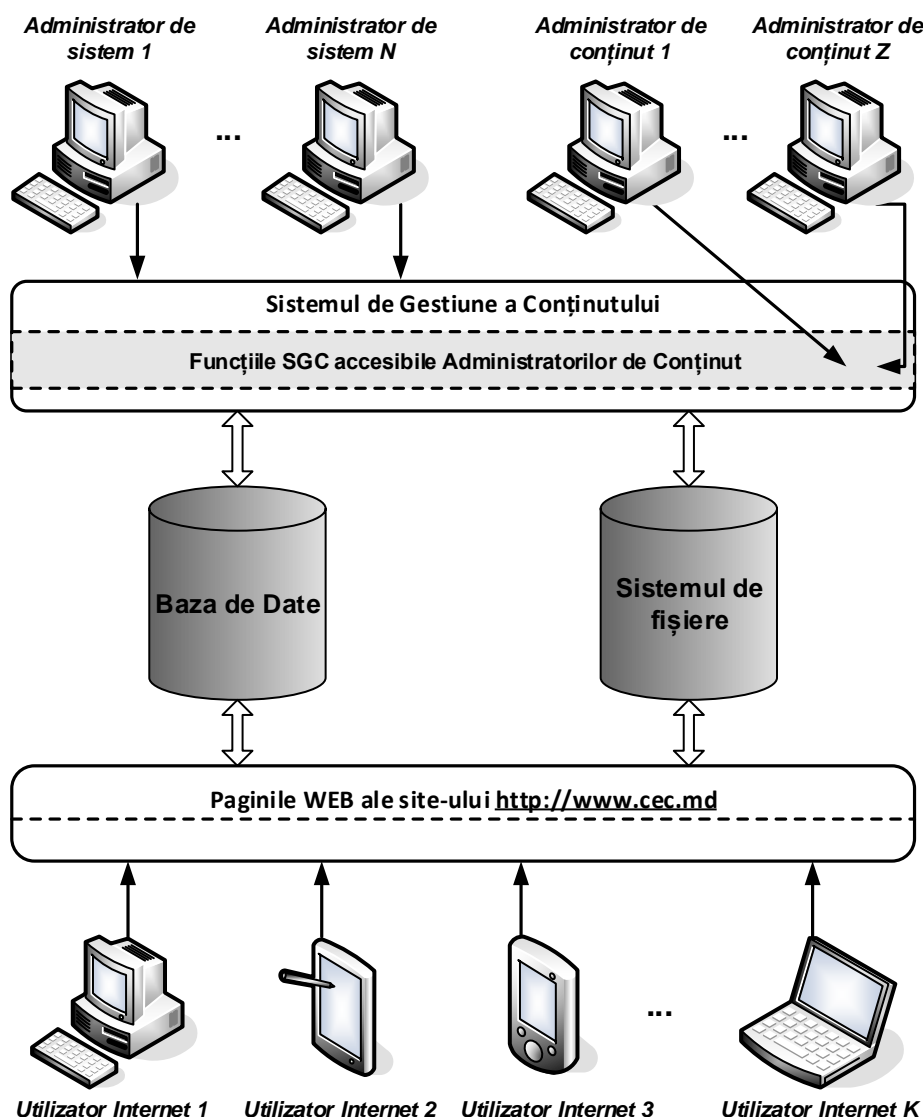


Figure 3.1. General structure of the CEC Official Website.

As we can see in Figure 3.1, from the functional perspective, it is envisaged to delineate the following basic components of the CEC Official Website intended to fulfil the visitors' requests:

- **Database** is intended to store the Website information content, except for external large documents (non-HTML), in *PDF, DOC/DOCX/ODT, PPT/PPTX/ODP, XLS/XLSX/ODS, RTF, ZIP*, format, etc. For the aforementioned large documents, the Database will store just the hypertext references on their location;
- **Files System** is intended to store external large documents (non-HTML) in *PDF, DOC/DOCX/ODT, PPT/PPTX/ODP, XLS/XLSX/ODS, RTF, ZIP* format, etc.;

- **Content Management System** with facilities to dynamically change the structure of the CEC Official Website, the information published on WEB pages and the site appearance;
- **Public interface** is intended to intermediate the *Internet Users'* access, including the access of administrators and operators as visitors, to the public part of the CEC Official Website.
- **Web pages** are the pages generated through the public interface upon the request of *Internet Users* and given back to them. Through such pages, the public part of information resources of the Website becomes known to visitors;
- **System Administrators** – staff members assigned with absolute functions and rights to maintain the Website, using the facilities *of the Content Management System*;
- **Content Administrators** – staff members assigned with partial functions of updating the content of the Website pages, using the facilities *of the Content Management System*.
- **Internet Users** – staff members assigned with functions to explore the public interface of the CEC Official Website.

The links among these components are specified in Figure 3.1. Hence, it can be noticed that *System Administrators* have access to all functionalities *of the Content Management System*, while *Content Administrators* have access just to some of these functionalities.

Public WEB pages are generated through the interaction with the public interface, database and the file system of the Website. Figure 3.1 shows that in case *of Internet user* the WEB page would ensure access to public interface WEB pages only.

3.2. CEC Official Website Architecture

In order to ensure the accomplishment of the objectives set for the IT solution, it will be required to take account of the architecture described in Figure 3.2. during the design, development and implementation of the CEC Official Website. Hence, the IT system assumes there are six contours in place that mutually interact:

- **Contour of technical infrastructure of the CEC Website** that includes all hardware equipment where the CEC Official Website will be hosted;
- **Contour of the Authenticated User** that includes the IT infrastructure of all authenticated users (*System Administrators and Content Administrators*) who operate or administer the authorised sections of the CEC Official Website.
- **Contour of Internet User** that includes the IT infrastructure of all anonymous users (*Internet Users*) who explore the public sections of the CEC Official Website.
- **Contour of the Centre for Special Telecommunications** that includes *MCloud* platform to furnish the authentication mechanism via electronic signature or via mobile identity granted by *MPass*.
- **Contour of Social Networks** that would offer WEB services intended to publish CEC Official Website content information on the most popular social networks.
- **Contour of Google Analytics** that would offer WEB services intended to collect statistics related to the operation of the CEC Official Website public interface.

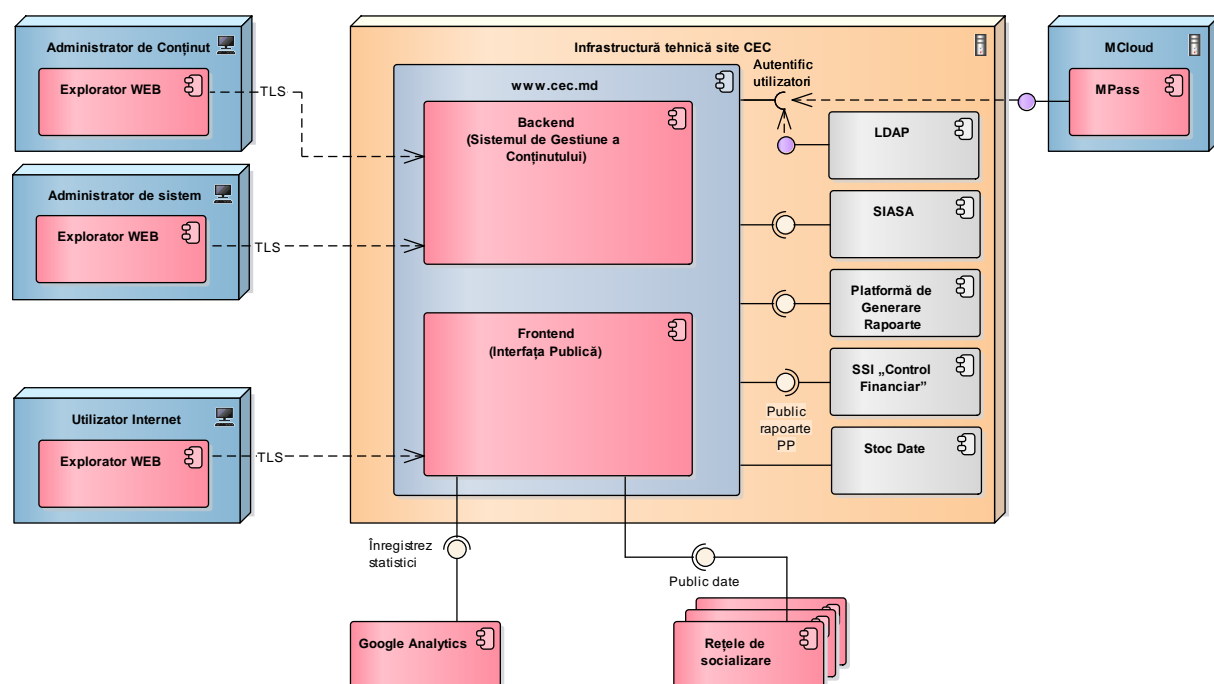


Figure 3.2. CEC Official Website Architecture.

As we can see in Figure 3.2, the CEC Official Website comprises two main components:

- **BackEnd** – Administrator Interface of the CEC Official Website through which the users with administration roles have access to the functionalities necessary to carry out administration processes related to their duties.
- **FrontEnd** – User Interface intended to grant access to general public to the CEC Official Website information content *and* to services furnished through it.

In order to use the CEC Official Website, any category of users shall have a reliable connexion. Authentication and authorisation of users will be done via the electronic signature/mobile identity, LDAP or User Name + Password. The System shall be based on authentication and authorisation, logging and data storage services.

Administration of system components will be done through remote connexion from the computer of the user assigned with administration role following his/her authentication and authorisation.

To ensure all its functionalities, the CEC Official Website will use a series of interfaces furnished by the external services and IT systems such as:

- **WEB Service Authenticate Users** – interface exposed by the SAISE Subsystem: *SAISE Admin* or alternatively by *MPass* platform service with the aim to implement the authentication and authorisation procedures of such users as *System Administrators and Content Administrators*.
- **WEB Service Notify** furnished by *SAISE Admin* to implement a universal and centralized mechanism of *SAISE* users' notification regardless of the *SAISE* application used.
- **WEB Service Logging** furnished by *SAISE Admin* to implement a universal and centralized mechanism for business events logging generated by the activity of authorized users within the *SAISE* applications used.

- **WEB Service Publish data on social networks** with the aim to interact with the most popular social networks to publish documents contained on the CEC Official Website on the pages of the most popular social networks.
- **WEB Service Record statistics** with the aim to integrate with *Google Analytics* as a key mechanism to collect statistics and generate reports and KPIs concerning the popularity of the CEC Official Website *Frontend* component *and* of its particular elements.

It is worth mentioning that the implementation of WEB services *Authenticate Users, Notify and Logging* is not mandatory and may be implemented alternatively through internal mechanisms implemented within the functional modules of the CEC Official Website.

As for the WEB service *Publish data on social networks, Record statistics and Display reports* the implementation is mandatory.

The CEC Official Website shall expose the following WEB service:

- **WEB Service Publish PP Reports** with the aim to integrate with the *“Financial Control” ITSS* to acquire and publish automatically reports on political party financing.

In addition to the aforementioned integrations, the CEC Official Website shall be able to integrate public interfaces furnished by the CEC IT subsystems (ITSS). These are diverse and could be developed over time. Out of this category of subsystems the following could be mentioned:

- Platform for the generation of analysis reports;
- Application “Preliminary Registration”;
- FB “Documentation”;
- FB “Competitors”;
- ITSS “Financial Control”;
- Other relevant subsystems.

4. CEC Official Website Functional Model

4.1. CEC Official Website Information objects

Having reviewed the modelled area (ensuring the CEC Website upgrade), some information objects can be delineated to be taken into account when the IT systems is being developed. Figure 4.1 presents the information objects, which will form the basis for designing a new version of the CEC Official Website.

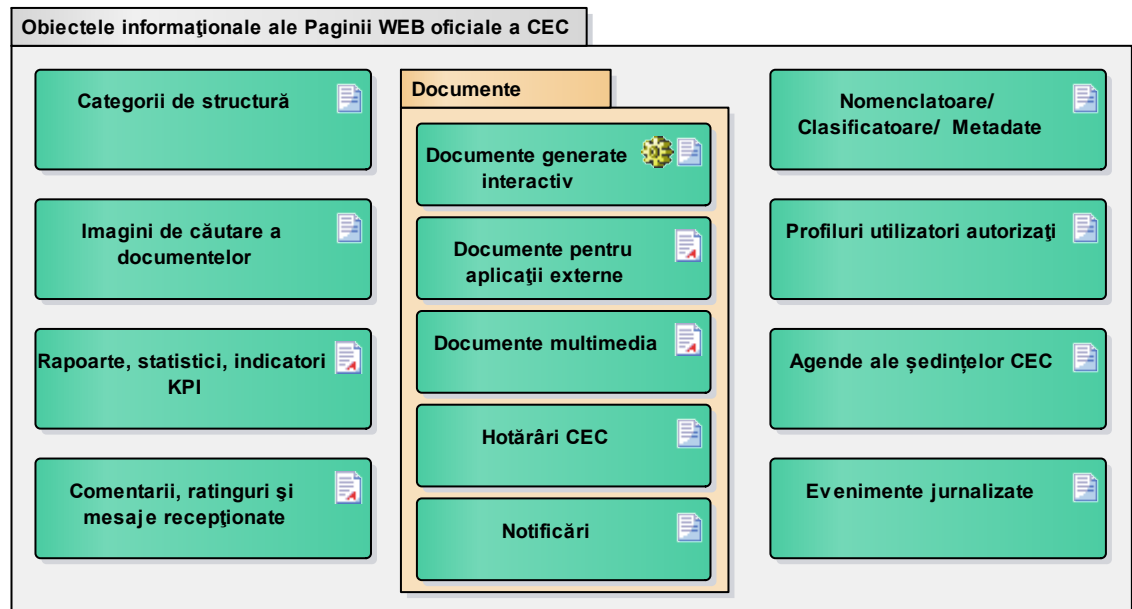


Figure 4.1. CEC Official Website Information Objects.

As we can see in Figure 4.1, there are nine categories of information objects to be taken into account in the process of upgrading the CEC Official Website, namely: *Structure categories, Documents, Meeting Agenda, Images for document searching, Reports/ Statistics/ KPIs, Comments on ratings and received messages, Profiles of authorised users, Nomenclatures/Classifiers/Metadata, Events logging.*

1. Structure categories

The developed solution would enable the CEC Official Website Administrators to dynamically change the structure, its appearance and content, using visual means only.

Likewise, *the System Administrator* would not be limited in the number of categories or in the depth of the structure tree, as well as in the number of contextual documents, graphical images or video films inserted in the text, etc. (within the limits of the memory space available on the server).

We deem it appropriate to universalise the administration procedures for the CEC Official Website content by developing universal stereotypes (templates) for information administration and its presentation on the content pages, which should furnish all rules for information administration and view, taking account of Administrator's functionalities.

These templates will be attached to structure categories of the CEC Official Website (*the System Administrator* will be able to attach to each category of the CEC Official Website relevant templates and eventual graphical designs to be displayed when retrieving the category content, activating/deactivating comments or ratings, topical blocks attached to the category, etc.).

Information categories will be leaf-categories of the CEC Official Website structure tree. The intermediate categories will not comprise content information, just generic information, and will

represent rather a structural than a content component. Once activates, such categories will display the subcategories they contain and, eventually, the generic information.

Presumably, the following templates can be delineated to be implemented within the CEC Official Website *Content Management System*:

- **Template “Category”** represents a non-information stereotype used only as a structure element to indicate the intermediate categories (of superior level) for leaf-categories with content information. Nonetheless, *the Content Management System* of the CEC Official Website will allow for configuring the information blocks for the information displayed in the content, placing the banners in the content category, defining the text from the content to be displayed upon category activation when it contains subcategories.
- **Template “Content document”** represents a stereotype for displaying events, news, notices, publications, other relevant documents, etc. This stereotype is the most universal, allowing to introduce any type of information and may be used for those categories, where the information will be displayed as a paginated list or alphabetical index. Each document will be represented through: the *date of publication, title, summary, credentials, generic image, generic video, photo gallery and hypertext reference for accessing the document*. Archive references will be automatically created by years and months (automatically in compliance with the documents existing in the database) and the option of a new document will be displayed if the document is more recent than the value of a variable set in the CEC Official Website *Content Management System*. If the option of displaying the date of the document is deactivated, the list of documents will be displayed in the FIFO sequence, while the archive references will not be displayed at all. The document content will be edited in a visual manner (WYSIWYG Editor), having ensured the possibility to dynamically insert in the document images, video, tables, hypertext references, etc. The CEC Official Website will allow attaching files, films and photo galleries to a document (having secured their upload on the server). Likewise, visitors will have the possibility to place comments to each document, and their rating for site categories where such functionality has been activated. Once being placed, the comment will be saved in the database, and a notification will be sent automatically to the *Administrator*. The comment shall be published only when it is authorized by the *Administrator*. For each separate category there would be the possibility to publish the news in RSS format. The Administrator will be able to activate or deactivate the export option in RSS format.
- **Template “CEC Decision”** represents a stereotype that defines all peculiarities for the administration and presentation of CEC decisions on the CEC Official Website. It allows displaying the details of CEC decisions and uploading the decision file.
- **Template “CEC Meeting Agenda”** represents a stereotype that allows drafting the CEC meeting agenda (publishing the meeting date, agenda, posting the documents considered and decisions adopted).
- **Template “Feedback”** represents a standard feedback mechanism. The Module for online placement of questions or suggestions will contain a TURING test for verification if the actor that placed the message is a human-being or a robot. This stereotype will allow sending messages only (questions, suggestions, etc.) without their display. Once sent, the message

will be saved in the database and a copy of it will be sent to the Email of the CEC responsible person.

Upon the development of the templates described in this Section, a series of general considerations will be taken into account (options administered visually by CEC Official Website Administrators):

- **Attaching a generic image** – for stereotypes: *Content document, CEC Meeting Agenda, CEC Decision* – it would be possible to attach a generic image to each document (for example, document cover page, photo taken at an event, etc.). The System will resize automatically the image size, displaying it along with the document, when the corresponding content category is being displayed;
- **Posting comments** – for stereotypes: *Content document, CEC Meeting Agenda, CEC Decision* – it would be possible to activate/deactivate the option of posting comments by *Internet Users*;
- **Document referencing** – for stereotypes: *Content document, CEC Meeting Agenda, CEC Decision* – it would be possible to insert, visually, in the document content (in a special field of the document) references to other relevant documents available on the CEC Official Website or outside it (or displaying semantic beacons). The use principle will be similar with the one used to this end for reference blocks to generic information of the *Category* stereotype.
- **Automatic generation of RSS bands** – for stereotypes: *Content document, CEC Meeting Agenda, CEC Decision*, it would be possible to activate/deactivate the facilities for exporting the information in RSS format.
- **Placement of banners** – for stereotypes: *Content document, CEC Meeting Agenda, CEC Decision, Feedback* – it would be possible to define principles for placing advertising banners. The Website will have its own system for placing banners, and it would be necessary to activate/deactivate the option of displaying banners for each category or define the principles of their displaying.

In addition to the templates described above, the Public interface will comprise also the following templates that would automatically display the information without any Administrator's intervention:

- **Site Map** – will allow generating automatically the location map (dynamic or partial), taking account of the structure defined by the Administrator;
- **Printable Version** – will allow, for all HTML pages, reformatting in A4 format with minimum graphical design for printing purposes;
- **Search** – will allow searching by key words in the whole content of the CEC Official Website and display the query result in a downwards sequence of their relevance. Likewise, the user will have the possibility to formulate the criteria for advanced search (setting the refining search criteria in specific categories of the CEC Official Website, types of documents, date of publication, etc.).

2. Documents

This is a complex information object that forms the content of the CEC Official Website. Depending on the scope of document application and use, there are five categories of documents described below:

2.1. Document generated interactively.

This represents an information object specific for the largest part of the CEC Official Website information content, which is administered and displayed on the basis of the template “*CONTENT DOCUMENT*”. The specificity of this type of document is that it is generated dynamically each time it is accessed on the basis of DB Metadata and data. This category of documents may be contained in other types of complex information objects (agenda), but could be used separately when defining in certain categories of general information the CEC Official Website on the basis of the template “*CONTENT DOCUMENT*”. It shall contain the following data and Metadata:

- Issuer data;
- document location data (document URL);
- starting date;
- ending date;
- title;
- references of document origin;
- summary;
- suggestive image;
- content;
- images inserted in the content;
- photo gallery attached;
- video gallery attached;
- files attached.

2.2. Documents for external applications.

These are documents placed in the CEC Official Website content (documents in DOC, RTF, PDF, XLS format inserted in the CEC Official Website content), which reading requires a specialised application. As a rule, this category of documents is used when the information placed in the CEC Official Website content cannot be placed through the template “*CONTENT DOCUMENT*” (document generated interactively) due to its huge size or complexity of its formatting (complex design elements, images, tables, other complex illustrative elements). In this case it is rational to save the document in its original format (PDF, XLS, DOC), inserting a URL reference in the CEC Official Website content so that it could be downloaded by users and opened using a relevant external application.

This category of information objects comprises files, documents which references are placed in the content documents generated interactively, CEC decisions, presentations, specific publications, etc.

Documents of this type will not be inserted in the database; they will be saved in specific files of the CEC Official Website *or in* external data sources. The database will comprise only the URL for accessing the file.

2.3. Multimedia Document.

These are documents in Multimedia format (AVI, FLV, MP3, MP4, etc.), which references are placed in the CEC Official Website content. References to this type of documents could be placed in the content documents generated interactively for the purpose of displaying information in video format.

The documents of this type will not be inserted into the database; they will be saved in specific files of the CEC Official Website *or* in external data sources (the database will keep just the way of physical access to files) or retrieved from external sources (*for example, YouTube, privesc.eu, etc.*). The CEC Official Website will detect automatically, out of the reference, the nature of the Multimedia file and will provide a specific mechanism for its presentation regardless of its nature (video or audio).

2.4. CEC Decision

This is an information object specific for CEC activity, which provides all data necessary to identify and process the CEC Decisions. The following data related to this information object can be identified:

- Decision name;
- Date of decision adoption;
- Decision title;
- Decision summary;
- Document status;
- Reference to the approved document (file or reference on <http://lex.justice.md>).

2.5. Notification.

This category of information objects is part of the notification mechanism implemented within the CEC Official Website. As notification one can consider an official document displayed by the CEC Official Website in the authenticated User Interface when certain business events take place related to user's activity.

The CEC Official Website will send notifications to authenticated users when the following categories of events occur:

- notifications that inform on certain events (receiving feedback messages, comments, new or updated content for approval, etc.).
- system notifications (that notifies the *System Administrator* that some phenomena have been produced that may endanger the well-functioning of the CEC Official Website).

Notifications will be generated automatically by the CEC Official Website and sent via EMAIL to their recipients. A copy of the notifications will be placed in a special area of User Interface (the authorised user's *Dashboard*).

The way and format for receiving the notifications will be configured by the authenticated user through the facilities provided by its *Dashboard*.

3. CEC Meeting Agenda

This represents a complex information object that allows placing relevant data on CEC meeting. One can identify the following categories of data placed in an event of CEC meeting agenda:

- Meeting agenda;

- Documents considered in the agenda;
- Video recording of the meeting;
- Meeting protocol;
- Decisions approved at the meeting;
- Other relevant data.

4. Images for document searching

This represents a technological system document generated by the corresponding modules of the CEC Official Website following the indexation of the document content published on the CEC official Web page. Following the indexation of the document full content an image for document searching is created to be used in the process of information retrieval and displaying the results in compliance with their relevance to the query formulated by the user.

5. Reports, statistics and KPIs

This represents a set of standard reports (embedded physically) furnished by public interface and by the *Content Management System* of the CEC Official Website. The most frequent reports and statistics are represented by the statistics on information content of the Website and public reports furnished by the Platform for Generating CEC Analytical Reports.

Statistics represents a particular category of reports comprising the reports retrieved through *Google Analytics* and from the internal statistics system regarding the CEC Official Website popularity.

6. Comments on ratings and received messages

This category of information objects comprises all documents reflecting the feedback provided by visitors of the CEC Official Website, namely:

- messages sent through feedback forms;
- comments to the content placed on the CEC Official Website;
- rating the content placed on the CEC Official Website.

These contain the following Metadata:

- the time of placing the message/comment/rating;
- sender's identification data;
- recipient's identification data;
- message/comment/rating value.

7. Nomenclatures/classifiers/Metadata

This represents an information object that includes all Metadata afferent to the CEC Official Website. It will contain national classifiers (relatively static) managed by the National Bureau of Statistics and internal nomenclatures of the IT system to be developed over time and updated along with the operation of the IT system. *The Content Management System* of the CEC Official Website will allow configuring special sets of Metadata, classifiers and nomenclatures afferent to the CEC collection of documents.

Likewise, the Metadata category comprises all messages of user and administrator interface of the CEC Official Website that would be edited in all those three linguistic versions (Romanian, English and Russian).

8. Authorised User's Profile

This is a complex information object that comprises all data afferent to authorised users of the CEC Official Website (*Content Administrators* and *System Administrators*). In this regard, this information object will contain the following categories de information:

- data for user identification;
- data for user authentication;
- contact data (mail address, phone number, Email, etc.);
- preferences for configuring the administration interface;
- roles held within the CEC Official Website;
- rights of access to CEC Official Website sections.

9. Events logging

These represent complex information objects intended for IT audit and implementation of information security policy. Any sensitive business event (creation, change, suppression of records, etc.) or activity of authenticated users shall be logged in special file logs, stating the time, action details and the user who generated the business event.

4.2. CEC Official Website Functionalities

The functionalities delivered by the CEC Official Website and actors who benefit from them are displayed in the diagram of use cases presented in Figure 4.2.

As per the scheme described in Figure 4.2., the CEC Official Website actors have access to 24 use cases that furnish the following functionalities:

UC01: Retrieve RSS flows

This represents a Use Case accessible to *Internet Users* through which it is possible to subscribe and receive RSS flows. The CEC Official Website shall deliver an advanced mechanism for configuration to the *RSS flows*, enabling their aggregation or detailing, taking account of the structure and system of Metadata of the CEC Official Website.

UC02: Explore the content

This is one of the most complex use cases of the CEC Official Website public interface available to *Internet Users* that includes all procedures to navigate in the CEC Official Website content, view and download the relevant information for the needs of Internet users and access the services furnished to anonymous users.

As the *System Administrators of the CEC Official Website* will match each category of the Website structure with a template for information administration and display, the *Internet User Interface* will present globally and particularly the content of each category, taking account of these Metadata. Hence, for instance, depending on the used model, a specific graphical design will be displayed, the archives will be activated or hidden, the information will be displayed as a list or as a tree, etc.

For each information component the interface for Internet visitors will create a URL for downloading the information.

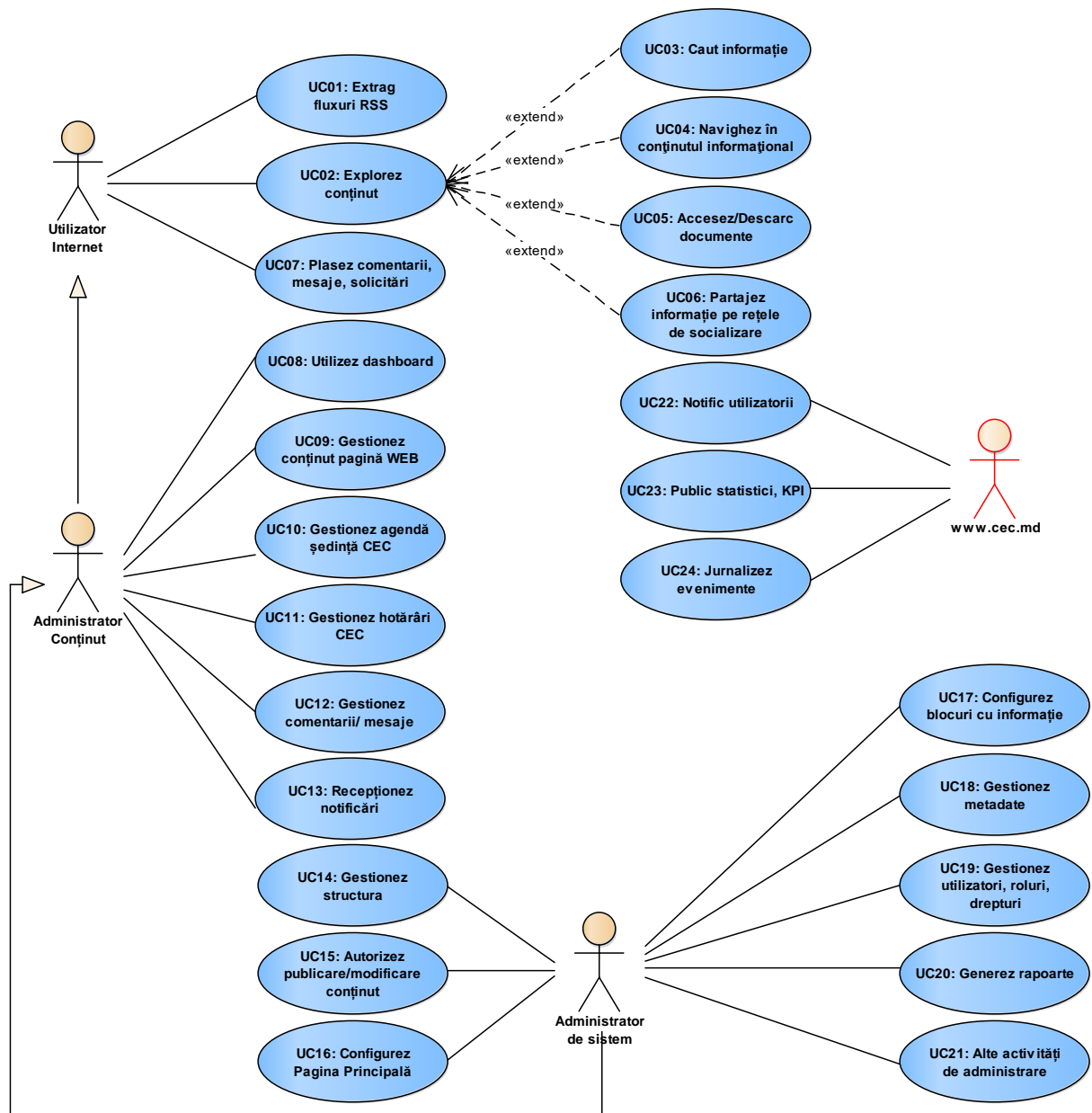


Figure 4.2. CEC Official Website Functionalities.

UC03: Search information

This is a Use Case furnished by public interface of the CEC Official Website that provides all functionalities necessary to search the relevant information for users' needs.

This represents a way of searching in the whole content of the CEC Official Website *based on* a query defined by the user. The user shall insert in a special field a text sequence to be used as basis for searching and formulating, when necessary, rules for reducing the scope of searching in the options for advanced search (*for example, time interval, sections of the CEC Official Website, specific beacons, etc.*).

In order to enhance the performance and relevance of obtained results it is desirable to implement a search procedure, using a mechanism for indexed search (alternative: *Elastic Search* integration).

UC04: Navigate in the information content

This is a Use Case furnished by public interface of the CEC Official Website that provides the functionalities necessary to navigate in the content of the Website with the aim to find relevant information.

This represents a strategy for exploring the CEC Official Website when the navigation mechanisms are based on the site structure tree (navigation in the tree of structure categories of the Website).

In this case, the relevant information will be displayed in the leaf-categories of this tree.

UC05: Access/Download documents

This is a Use Case furnished by public interface of the CEC Official Website that provides the users with the functionalities necessary to access and retrieve the documents published in the CEC Official Website information content regardless of their nature (documents for external applications, Multimedia documents or dynamically generated documents).

UC06: Share information on social networks

This is a Use Case furnished by public interface of the CEC Official Website through which *Internet Users* publish automatically documents from the content of the CEC Official Website (share documents, press releases, agenda events for CEC meetings, etc.) on the most popular social networks.

UC07: Place comments, messages, requests

This is a method of interaction of *Internet Users* with people responsible for the CEC Official Website. It could be carried out via two possibilities: as a survey or as comments provided to or rating the publications placed in the CEC Official Website content.

Messages are saved in the database and accessed by *Content Administrators or System Administrators* from the administration space of the CEC Official Website. A copy of the message is sent via Email to the person responsible for the category where the commented document is located.

UC08: Use a Dashboard

This is a Use Case accessible to users with administration roles within the CEC Official Website (*Content Administrator and System Administrator*) through which they have fast access to business events related to their activity within the *BackEnd* space of the CEC Official Website.

The Dashboard will display, depending on specific user, summary statistics or a list of critical events afferent to the users with administration roles through which they will be notified to access rapidly all functionalities and tasks afferent to their job duties.

UC09: Manage the Website content

This is a Use Case through which *Content Administrators* administer the information space of the CEC Official Website they were granted the right of access to.

This space covers administration of the information content (placing/suppression of publications from the content, reorganization of the CEC Official Website content, administration of messages and comments received, defining the rules for presenting the information content, etc.).

UC10: Manage the CEC Meeting Agenda

This is a Use Case that furnishes to *Content Administrators* all functionalities necessary to manage the CEC meeting agenda. The management of CEC meeting agenda covers the definition of all agenda

events and explicit insertion of relevant documents into those events or acquiring documents from the content of the CEC Official Website.

UC11: Manage CEC decisions

This is a Use Case via which *Content Administrators* administer all decisions adopted within CEC meetings. Unlike other content documents, these are defined by distinct Metadata and require implementing certain mechanisms for presenting in the public interface of the CEC Official Website.

UC12: Manage comments/messages

This is a Use Case that furnishes users with administration roles all functionalities through which they access and administer feedback comments and messages received from *Internet Users* through the facilities exposed by the CEC Official Website.

UC13: Receive notifications

This is a Use Case that does not belong to the current Scope of Work through which the authorized users of CEC Official Website *BackEnd* component will get the notifications sent by the CEC Official Website *in case of specific business events*.

The System will store all notifications in the *Dashboard* of the authorised user of the CEC Official Website *BackEnd component* and, alternatively, to his Email.

UC14: Manage the structure

This is a complex Use Case that furnishes *the System Administrator* all functionalities necessary to carry out overall management of the CEC Official Website structure that covers the following categories of functionalities:

- defining the CEC Official Website structure;
- reorganising the CEC Official Website structure;
- defining the rules for presenting the category information content of the CEC Official Website.

All actions on the structure and information content of the CEC Official Website will be carried out exclusively through visual means.

UC15: Authorise the publication/change of content

This is a Use Case accessible to *System Administrator and Content Administrators with specific rights* through which they have access to all functionalities intended to ensure fast access to the content of the CEC Official Website to be published, to authorise or cancel the content publication.

UC16: Configure the Main Page

This is a complex Use Case that furnishes *the System Administrator* the functionalities necessary to manage the appearance of the Main Page of the CEC Official Website that covers the following categories of functionalities:

- defining the design style devoted to noteworthy events;
- defining the principles for displaying the design appearance during the regular days;
- defining the Modules published on the Main Page (questionnaires, banners, etc.) and the sequence of their display;

- configuring and publishing KPIs;
- configuring and publishing dynamic areas with information.

The actions aimed to configure the Main Page of the CEC Official Website will be carried out exclusively through visual means.

UC17: Configure information blocks

This is a complex Use Case that furnishes *the System Administrator* all functionalities necessary to configure and publish the information blocks of the CEC Official Website (grouping documents in blocks) that covers the following categories of functionalities:

- defining the information block;
- defining the information block design principles;
- inserting the information block content (defining the principles for automatic insertion or its explicit placement);
- defining the principles for displaying the content of information block elements;
- defining the principles for ordering the elements within the information block;
- placing the information block on the Main Page or the content information categories.

The actions for configuring the information blocks of the CEC Official Website will be carried out exclusively through visual means.

UC18: Manage Metadata

This is a Use Case that furnishes *the System Administrator* functionalities through which it administers nomenclatures, classifiers and other categories of Metadata afferent of an IT solution (including User Interface of the IT system).

UC19: Manage users, roles, rights.

This is a Use Case that furnishes *the System Administrator* functionalities through which it administers the list of roles and rights associated with them and subsequently assigns them to authenticated users with administration roles of the CEC Official Website content.

These categories of users correspond to *Content Administrators* who, based on their roles and rights, will have available the information space of the CEC Official Website they administer.

UC20: Generate reports

This is functionality accessible to *System Administrators* that allows generating pre-established and ad-hoc reports on the information content of the IT system and users' activity (taking account of the users' rights of access to information).

These reports are useful for the analysis of the system information base, the activity performance of authorised users, in particular, members of Parliament, allowing to anticipate information security issues or to identify perspective development for the CEC Official Website.

UC21. Other administration activities

This represents a Use Case intended for *System Administrators* that describes all functionalities accessible to them in order to administer and audit the CEC Official Website: maintenance of the list and integrity of users' credentials with access to administration space, retrieval of reports from the system logs for analysis purposes to detect any eventual issues of logical and physical security of the CEC Official Website, etc.

The System Administrator will have available a mechanism for configuring and assigning roles to all categories of users involved in the administration and operation of the IT system. This mechanism will allow defining the access parameters to the DB interface, services, files and content.

The Use Case for the administration of the CEC Official Website will implement all functionalities to ensure the IT system viability and integrity.

UC22: Notify the users

This is a Use Case that provides functionalities of notifying the authenticated users of the CEC Official Website. Notifications will be stored in the Content Administrator Dashboard. Likewise, notifications will be sent alternatively through Email.

The CEC Official Website will automatically generate and send notifications afferent to each event of placing content on the site (adding/changing/deleting/approving documents, etc.).

UC23: Publish statistics, KPIs

This is a Use Case that delivers all functionalities necessary to generate, export and publish public statistical information on the activity of the CEC Official Website.

This information is a category of *KPI* furnished automatically by the system. The CEC Official Website will incorporate periodic functions for disseminating different information about the system, which include:

- system messages that certify the system viability sent to monitoring and administration services;
- values of Performance Indicators related to the CEC activity;
- detailed open data.

UC24: Logging events

The CEC Official Website will contain all functionalities that would allow configuring the operation principles and generation of events that will be logged, as well as defining strategies for collecting the logged events.

4.3. CEC Official Website Information Flows

To ensure the CEC Official Website functionalities it is necessary to implement nine primary categories of information flows available to different categories of users of the IT system:

- **Managing the Website structure.** This represents the flow used by *System Administrators* for defining the CEC Official Website structure and configuring parameters for displaying the information placed in the CEC Official Website categories.
- **Reorganising the Website content.** This represents the flow used by *System Administrators* for fast reorganisation of either the CEC Official Website structure (moving the

subcategories with content from one category to another) or the CEC Official Website information content (moving the documents from one category to another).

- **Managing the Website content.** This represents the flow used by *Content Administrators* for writing and publishing documents on the CEC Official Website that covers: writing a document, filling in the Metadata afferent to the document, displaying the context images, films or photo galleries related to the document, defining the parameters for publishing the document on the CEC Official Website.
- **Managing Multimedia documents.** This represents the flow used by *Content Administrators* for writing and publishing explicit categories of Multimedia documents (photo galleries, video galleries) on the CEC Official Website.
- **Managing the CEC Meeting Agenda.** This represents the flow used by *Content Administrators* for writing and publishing the CEC meeting agenda. The functionalities furnished by the CEC Official Website Content Management System will allow writing the agenda, inserting the documents in the agenda and their sequence.
- **Managing the CEC Decisions.** This represents the flow used by *Content Administrators* for writing and publishing all decisions approved by CEC. Certain life-cycles and Metadata correspond to these, which would be administered through the facilities made available by the CEC Official Website Content Management System.
- **Searching information.** This represents the flow used by *Internet Users* with the aim to formulate search queries and retrieve documents relevant for their needs.
- **Retrieving reports and statistics.** This represents the flow used by *System Administrators* that allow accessing and generating statistics afferent to the activity of users authorised in the CEC Official Website Content Management System or interaction of *Internet Users* with the public interface of the Website www.cec.md.
- **Administering the Feedback mechanism.** This represents the flow used by *Internet Users and Content Administrators* that contains all functionalities for their mutual interaction (from the comment publication or message sending through the CEC Official Website to their consideration and processing).

4.4. CEC Official Website User Interface

4.4.1 General considerations on the design of content pages

The display and administration of the CEC Official Website content will be based mainly on the use of interactive pages, through which the dynamic creation of the CEC Official Website structure and facile administration of its content would be ensured.

The System Administrator of the CEC Official Website will be able to easily define and change its structure, by dynamically adding/suppressing sections, topical HTML pages and documents attached thereto in *PDF, DOC/DOCX/ODT, PPT/PPTX/ODP, XLS/XLSX/ODS, RTF, ZIP, MP3, FLV* format, etc. Likewise, for specific categories of information or documents, the Administrator will be able to define and change information blocks, advertising banners, etc.

The graphical appearance of websites will be carried out predominantly in the colours of the CEC brandbook in an agreeable and pleasant combination for Internet visitors, having complied with the WEB 2 principles and for some sections – with WEB 3 principles.

As design elements it is appropriate to use some images related to the CEC area of activity, the State and CEC symbols. The solution will offer several graphical design themes (header and footer) to be attached by the Administrator to the respective information categories (or the public interface will display them at random).

The main focus will be placed on content, using the work with text styles (to ensure greater speed of page uploading). The CEC Official Website design shall be responsive and automatically adjustable to the resolution and facilities of any connection device (PC, laptop, netbook, smartphone, and tablet).

The Main Page will cover the latest events in the CEC area of activity, the latest documents and decisions related to CEC work. At the same time, the modules used on the Main Page will not upload visually the information blocks. The Administrator will be able to add and configure dynamically the information blocks. These blocks are of three types:

- **static** – when specific documents are shown to be always displayed in the information block;
- **dynamic** – when the number of recent documents is shown to be displayed (for example, the last five documents of this category, etc.);
- **combined** – when the block contains both static and dynamic information.

References within websites will be formatted visually via underscored text. The underscored text will not be used to format other elements. It will be insisted on keeping the colour of references as close as possible to the implicit colour style of the Beneficiary. The use of italic font in titles should be avoided.

The set of fonts existing on PCs with installed versions of operating systems Windows 10/8/7/XP, Linux, Mac OS X shall be used. These are: *Arial*, *Helvetica*, *Sans-Serif (MS Sans Serif)*, *Courier (Courier New)*, *Times New Roman*, *Tahoma*, and *Verdana*.

4.4.2 CEC Official Website Public User Interface

Public interface is the interface with non-authenticated access to the CEC Official Website space intended for the general public. Through this interface, the Internet visitors will have the possibility to navigate through the content, download files, view Multimedia files, do searching, place comments, messages, etc.

The public interface will be based on a handy navigation system, so that the visitors could easily and rapidly find the necessary information. The flexible system for configuring the Main Page will allow the Administrators to draw the visitors' attention to the most interesting site information.

The public interface will be developed based on responsive design adaptable to the resolution and facilities provided by the device used (PC, laptop, netbook, smartphone, tablet), taking account of the requirements already formulated.

The site content will be introduced and displayed in Unicode (UTF-8) format, which will allow for concurrent displaying the texts with Latin and Cyrillic characters.

The Content Management System will allow writing the page Metadata so that each page of the public interface will have completed beacons:

- `<meta name="Title (the value will be retrieved from the document title)">`

- <meta name="Description">
- <meta name="KeyWords">.

Visitors will have the possibility to access three navigation Menus:

- Main Menu of the Website, located in the left part of the page header;
- Fast Menu to access level 1 categories of the site structure situated in the page footer;
- Static Menu /tool bar from where the linguistic versions, Website map, contact address and the Main Page can be accessed.

For each document introduced in the system, it will be possible to enter and display the following Metadata:

- date of document publication;
- document title;
- document explicit summary;
- document key words;
- document bibliography (Author, Publisher, Issuer, etc.);
- document content (in HTML format, attached file in DOC, ODT, ODS, RTF, PDF, XLS, ZIP format or URL reference to an internal document or an external site). The System will create automatically the document URL;
- document context image;
- document context video;
- document context photo gallery.

Implicitly, when the document is introduced in HTML format, if the document summary is not explicitly specified, the system will retrieve as summary the first 40 words from the document content. All images attached to the document will be adjusted automatically to standard sizes of the Website design.

Upon the development of public interface, it will take account of the perfect compatibility of the site appearance with Internet browsers: MS Edge/*MS Internet Explorer*, *Mozilla FireFox*, *Safari*, *Google Chrome* and *Opera*.

4.4.3 CEC Official Website Public Interface adapted to other devices

As the CEC Official Website will be accessed from different devices (not always from PCs and laptops) it would call for developing several versions of public interface intended for *Internet Users*.

To this end it is required to develop (through responsive design) the following additional versions of User Interface for the following devices:

- **Smartphone** – optimised for operating systems Android and iOS and standard resolutions intended for modern mobile phones. The interface for such devices will be adjusted to low resolution to enhance the ergonomics for using touch screen.

- **Tablet** – optimised for operating systems Android and iOS and standard resolutions intended for tablets (as a rule, standard resolution with maximal width of 1024 pixels would be sufficient). In the case of these devices the interface will be adjusted to enhance the ergonomics for using touch screen.

4.4.4 User Interface of the CEC Official Website Main Page

The Main Page is the key component of the CEC Official Website, through which the user will find rapidly the information of highest interest. In order to easily update it, including the structures, the Main Page shall be configurable. *The System Administrator* will be able to hide or display, in a visual manner, references to available linguistic versions. Likewise, it will be possible to define the standard elements: notices, events, generic text on the first page (hiding/displaying/defining the sequence of appearance or of categories, where the information is to be retrieved from) and of dynamic elements.

The Main Page shall cover recent decisions, news, events from the CEC relevant area of activity, dynamic information blocks, advertising banners, access to electronic services of the CEC Official Website. Information blocks are the dynamic elements of the Main Page. The Administrators will be able to dynamically define the information blocks (create, suppress, show style elements), specify the information to be placed in the block, define the information for block identification and the sequence of their display.

In fact, it is envisaged to place on this Page the following information blocks and navigation elements: *Header, Footer, Available Linguistic Versions, References for Direct Navigation, Navigation Menu, Level References, Search Module, Questionnaire, Advertising Banners, Dynamic Information Blocks, Electronic Services, Bottom Menu.*

Header, with graphical elements relevant for the CEC brandbook, will be placed in the upper part of the page, over the whole width. The State symbols and the CEC symbols (where appropriate) will be placed in the left part. The remaining space will be completed with a graphical collage coving the CEC thematic areas of activity, subject to change, depending on the Website Section or configurations defined by *the System Administrator*.

Footer will be placed in the lower part of the Main Page, covering the whole width and containing the basic contact information: *address, phone, fax, email; note on Copyright and on reproducing the information from the Page; the date of last update of the Website (any type of updated information will be taken into account); the number of visitors on a specific date.*

Available linguistic versions (for possible subsequent development). References will be done using text. The area for selecting the linguistic version will be visually emphasized to be easily found; however, it should not contain a colour background that annoys the sight.

References for direct navigation:

- MAIN – reference to the Main Page;
- CONTACT – reference to the contact email;
- MAP – reference to the CEC Official Website map;
- RSS – subscription to RSS flows;
- SEARCH – form to introduce the search query;

- **MENU** – name of superior categories of the navigation menu and hypertext reference, placed in the footer of each page.

Navigation Menu. The Menu options will be located in the left part either vertically or horizontally; preference will be given to a tree-type structure, which categories will be open /close when pressing them. By default, the tree will be closed, the categories being displayed at the root level.

Level references – will be placed below the Page header of the site, showing the hierarchical location of the current document; for example, *Main Page / CEC Apparatus / Subdivisions of the Apparatus*.

Press Releases / Events – information block containing a defined number of latest events, news, excerpts from different categories of the CEC Official Website and displayed in the decreasing sequence of the date of their publication.

CEC Decisions – a Module that will allow fast access to the decisions adopted by CEC.

CEC Meetings – a Module that will allow fast access to the CEC meeting agenda.

Search Module will include elements for advanced search. It will represent a search box and a button for launching the searching process and a version for configuring the parameters for advanced search of information on the CEC Official Website.

Online Questionnaire through which online surveys will be conducted. It will contain the voting options and reference to the survey archive. The System will generate automatically a survey archive (the Questionnaire will be displayed/hidden on the Main Page).

Advertising Banners – will be placed in any area of the Main Page located between the header and footer and contain references to certain WEB pages (or documents comprised by the CEC Official Website). At the same time, *the Content Management System* will allow placing banners in any area of the page.

USEFUL TOOLS – this is a modal window ensuring fast and convenient access to all CEC electronic services provided through the Website www.cec.md.

Information Blocks – will contain materials from the site content categories with recent publications, quick data, notices, pictures from the photo gallery, text, etc. with the possibility to be dynamically defined by the Administrator within the three site lanes: left band, central band or right band. The blocks will be based on three principles: static – when the specified documents are always displayed; dynamic – when the last N documents are displayed; and combined – the use of dynamic and static elements. Likewise, there would be the possibility to split the blocks from the central lane into several columns.

Descriptive Text will be displayed optionally when it is desired to place a full text on the Main Page (placed in the area of information blocks). In this way it would be possible to display important opinions/notices, greetings, etc.

Bottom Menu. In order to ensure enhanced ergonomics of the interface, a navigation menu will be located above the footer, comprising references to all level 1 options of the Navigation Menu.

The Content Management System of the CEC Website will allow for changing, upon need, the way of information presentation on the Main Page, i.e.:

- displaying/hiding Menu options;
- displaying/hiding the available linguistic versions;

- defining the number of the latest events displayed on the Main Page;
- placing/hiding notices, seminars, events of paramount importance;
- defining/hiding/deleting the information blocks, etc.

4.4.5 Content Management System User Interface of the CEC Official Website

Content Administrators will manage the content and administrate the CEC Official Website, using the *Content Management System* facilities accessible through the Administrator Interface of the CEC Official Website.

The Content Management System will allow changing the structure, content and appearance of the CEC Official Website. This component will be accessed through a URL and will be available only to the *Content Administrators* authorised through User Name+Password, electronic signature or LDAP.

Following the analysis of the existing and potential requirements for the operation of the CEC Official Website under rational conditions, it can be concluded that the User Interface of *the Content Management System* shall contain the following basic modules integrated in different stereotypes furnished by it:

1. **Administration of CEC official Website structure** used by the Beneficiary for dynamic definition and administration of the CEC Official Website structure. Hence, categories and subcategories will be defined (including their reorganisation: moving subcategories with the whole content from one category to another, reorganisation of nomenclatures, etc.). Likewise, the rules for presenting and administering the Navigation Menu options will be defined visually.
2. **Administration of the CEC Official Website content.** For each option of the Navigation Menu it will be possible to add an unlimited number of content elements, taking account of the nature of templates used. For managing the textual content the User Interface will provide an Editor based on the WYSIWYG principle. The content administration implies providing a User Interface to administer such content as: *textual documents, Media documents (FLV video, MP3 audio), traditional files (PDF, DOC, XLS, etc.), photo galleries, meeting agenda, decisions, etc.*
3. **Administration of dynamic blocks** used for defining and managing all dynamic blocks located on the CEC Official Website Main Page and content pages thereto. *In* particular, the block title will be defined, its design style, location and content (either automatically retrieved or explicitly stated), principles for displaying the content details, etc.
4. **Management of the Main Page** used for configuring its appearance: defining the elements for automated presentation, dynamic definition of information blocks and their content, defining the sequence of element displaying, defining the principles for displaying the site linguistic versions, the design style etc.
5. **Questioning the Internet Users** that will enable conducting online surveys. This functionality will allow for dynamic supplementing of Questionnaires and the answer options within each Questionnaire.
6. **Handling the comments** will allow storing all comments introduced by *Internet Users* to the documents placed in the CEC Official Website content. The users with administration roles will be able to suppress, hide, respond or publish the comments.

7. **Handling the banners** will be used by *the Content Administrator* for setting the principles for placing and displaying the advertising banners (it is not about commercials, but advertising the events and the Website content) in the CEC Official Website content. There would be the option to define the status and variable placement of advertising on the Main Page and content categories of the CEC Official Website.
8. **Handling the Feedback messages** will allow the visitors of the CEC Official Website to ask questions online through the Website to be subsequently considered and processed by the competent *Content Administrators*.
9. **Dashboard** will allow notifying the *Content Administrators* assigned with the rights of final approval of information publication about new system entries to be subject to review and approval (documents, pages, comments) introduced by the users assigned with content administration roles and posted by Internet Users. The Administrator will be able to directly access the document from the *Dashboard* in order to edit, suppress, hide or publish the accessed objects.
10. **Monitoring the CEC Official Website traffic** that will provide statistics on the use of *Frontend* component of *Google Analytics* with the aim to use the set of statistical reports and KPIs furnished by *Google Analytics*.
11. **Global configuration of the CEC Official Website** where the general parameters of site operation will be configured (the content of Meta beacons, the number of elements displayed on the Page, contact email address, ways of access, operation parameters, design parameters, etc.).
12. **Regionalising the CEC Official Website** that will allow editing messages for the User Interface of the CEC Official Website in all linguistic versions used (Romanian, English and Russian).
13. **Administration of users** that will allow managing the access to *the CEC Official Website Content Management System* and the information space reserved for *Content Administrators* from the CEC Secretariat subdivisions.
14. **Generation of WIDGET** that allows exporting the content information furnished by the CEC Official Website (news, press releases, documents, agenda, etc.) to external pages/sites.
15. **Fast access to services** that will allow configuring a special area of the CEC Official Website available within each section of the site for direct and fact access of the most demanded and important functionalities of the CEC Official Website (*for example, Generate reports, Verify the Voters' lists, etc.*).
16. **System facilities** that would furnish all functionalities intended for system administration of the CEC Official Website (creation of backups, performance monitoring, etc.).

4.5. Reporting, audit and statistics mechanism of the CEC Official Website

The CEC official Website will have implemented functionalities for auditing/logging options broadly used in the industry. This is configurable for technical and business event logging.

The IT System will offer the possibility to generate automatically documents based on predefined templates. Special predefined format will be assigned to certain types of configurable WEB documents, depending on the use specificity. At the time of creating a document of that type, the user of the IT

system shall be able to specify certain data, while the system would automatically fill in the template corresponding to that type of document.

The CEC Official Website will delineate six categories of reports:

- **Categories of topical information** – depending on the stereotype used (template attached to the category) the CEC Official Website will retrieve information from the database and will generate a document for its presentation, including Metadata afferent to documents and having secured access to mechanisms for searching and navigating in the document displayed *for the Internet user (for example, printable version, CEC Decision, CEC Meeting Agenda etc.)*;
- **Monitoring reports** – represents a category of reports intended for CEC policy-makers used to assess the way of authorised users' interaction with *the Content Management System* of the Website www.cec.md. This category of reports will organize and display the content of logged events based on which the IT system vulnerabilities can be analysed and anticipated;
- **Internal statistical reports** – represents internal statistics for analyzing the CEC Official Website popularity (frequency of accessing, *Internet Users' geographical area*, the platform used by *Internet Users*, etc.);
- **Performance reports** – represents a category of static reports (as a rule, physically implemented in the IT system content) oriented towards the audit and analysis of the CEC Official Website information content (*for example, the brief report in the categories of documents stored on the CEC Official Website, report on the popularity of categories or documents comprised by the CEC Official Website, the number de comments and messages sent by Internet Users, etc.*).
- **Reports generated through public interface** – represents a category of reports implemented to ensure transparency of CEC activity. *The Internet Users* will have a mechanism for generating some categories of reports through the CEC WEB public interface to evaluate the electoral activity. The Website will be able to integrate the public component of the platform for generating CEC reports.

Due to strong mechanisms offered by *Google*, we deem necessary and welcome the integration of *Google Analytics* in parallel with the internal system of statistical analysis of the *Internet Users' interaction with* CEC Official Website. This would offer strong options for statistics generation on the use of the Website (<http://www.cec.md>) resources.

5. Requirements for the IT System

5.1. Functional Requirements of the IT System

5.1.1 UC01: Retrieve RSS flows

The functional requirements of the component for retrieving RSS flows from the content of the CEC Official Website are presented in Table 5.1.

Table 5.1. Functional requirements for the UC01 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 01.01. | M | The Website shall possess a mechanism for retrieving RSS flows from the CEC Official Website content |
| FR 01.02. | M | The users shall possess a mechanism for configuring RSS flows. |
| FR 01.03. | M | The structure classifier of the CEC Official Website will be used to define the principles for retrieving RSS flows. |
| FR 01.04. | M | The users will be able to select the degree of aggregation of RSS flows (in case of selecting a general category of the classifier, all flows of subordinated categories will be sent). |
| FR 01.05. | M | Any structure page of the CEC Official Website will contain a reference to RSS flow configured for the category of nomenclature to which the page corresponds. |

5.1.2 UC02: Explore the content

Functional requirements of the component for exploring the CEC Official Website are presented in Table 5.2.

Table 5.2. Functional requirements for the UC02 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 02.01. | M | The CEC Official Website will provide a User Interface intended to explore the open and restricted sections based on WEB 2 principles. |
| FR 02.02. | M | The CEC Official Website will provide a responsive interface for exploring the CEC Official Website content that will take account of the resolution and nature of the equipment it is accessed from. |
| FR 02.03. | M | The CEC Official Website will propose options for exploring its content (will emphasise) depending on the rating and popularity of its sections. |
| FR 02.03. | M | The CEC Official Website will make available mechanisms for interactive content filtering according to the values of Metadata and series of characters. |

5.1.3 UC03: Search information

Functional requirements of the component for information search in the CEC Official Website content are presented in Table 5.3.

Table 5.3. Functional requirements for the UC03 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| FR 03.01. | M | The CEC Official Website will provide functionality for global search in its content. |
| FR 03. 02. | M | The global search assumes there is a possibility to formulate a search query within a field reserved thereto. |
| FR 03.03. | M | The global search module will be displayed on each page of the content with public access of the CEC Official Website. |
| FR 03.04. | M | While defining the global search criterion the user will be able to make use of the logical expressions among the terms searched (AND, OR, NOT, LIKE). |
| FR 03.05. | M | The global search module will make use of morphological processing of the terms searched. |
| FR 03.06. | M | The global search module will contain mechanisms for restricting the search area using the system de Metadata of the CEC Official Website (including the structure). |
| FR 03.07. | M | The global search results will be ordered depending on the nature of the information found and depending on the configured parameters in <i>the Content Management System</i> . |
| FR 03.08. | M | The user will be able to formulate principles for reordering the results (for example, alphabetically ascending/descending order, upward/downward rating, etc.). |
| FR 03.09. | M | The CEC Official Website will attach a suggestive icon to the results found depending on their nature (legislative act, regulatory act, agenda event, document PDF, XLS, DOC, HTML, XML, etc.). |
| FR 03.01. | M | The CEC Official Website will provide functionality for guided search in its content. |
| FR 03.02. | M | The guided search will make use of visual mechanisms only without the need to use the keyboard. |
| FR 03.03. | M | The guided search will be based on a system of Metadata of the CEC Official Website. |
| FR 03.04. | M | The guided search will be launched by activating the option buttons depending on the choice, which will display the subsequent options for search refining (either by pressing the button with value options or by setting the YES/NO status of the search option). |
| FR 03.05. | M | The CEC Official Website will display scenarios of guided search depending on the nature of Metadata selected by the user. |
| FR 03.06. | M | For each stage of result refining, along with the selection buttons for guided search there would be the button with the option "ALL RESULTS". |
| FR 03.07. | M | The guided search shall possess a visual mechanism to define the calendar interval for search, without the possibility to use a calendar or to insert the date from the keyboard (a time bar will be used with the marks for the interval beginning and end to be visually displayed |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| | | in upward or downward order). |
| FR 03.08. | M | The IT System will deliver a mechanism for automatic pagination of the results found for all search regimes with the possibility to select from a predefined list the number of elements placed on the page. |
| FR 03.09. | D | It is desirable that the search mechanism makes use of procedures of indexed search. To this end the search procedure could be implemented through <i>Elastic Search</i> . |

5.1.4 UC04: Navigate in the information content

Functional requirements for the navigation component in the CEC Official Website information content are presented in Table 5.4.

Table 5.4. Functional requirements for the UC04 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 04.01 | M | The CEC Official Website will provide a navigation mechanism in the structure categories with the aim to find rapidly the relevant documents. |
| FR 04.02. | M | Once accessed, the navigation based on structure categories, the CEC Official Website will provide a similar navigation mechanism according to the principles of using a search director (where the structure tree corresponds to the Website structure). |
| FR 04.03. | M | The documents from the content will be located in the leaf-categories of the structure tree of the CEC Official Website. |
| FR 04.04. | M | The CEC Official Website will display structure references to show the site current hierarchical level. |
| FR 04.05. | M | The structure references will have hypertext references that would allow navigating towards superior hierarchical levels relative to the current category. |

5.1.5 UC05: Access/Download documents

Functional requirements of the document access or download component placed in the CEC Official Website content are presented in Table 5.5.

Table 5.5. Functional requirements for the UC05 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 05.01 | M | The CEC Official Website will allow viewing Multimedia documents in FLASH, VIDEO, AUDIO, GRAPHICAL IMAGE format. |
| FR 05.02 | M | For the traditional documents in DOC/DOCX, PDF, XLS/XLSX format, etc. the CEC Official Website will provide a mechanism to download them. |
| FR 05.03 | M | For all dynamically generated documents in HTML format the CEC Official Website will provide a printable version with minimum graphical |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|-------------------------------------|
| | | information adapted to A4 format. |

5.1.6 UC06: Share information on social networks

Functional requirements of document publishing component placed in the CEC Official Website content on social networks are presented in Table 5.6.

Table 5.6. Functional requirements for the UC06 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 06.01 | M | The CEC Official Website will allow publishing automatically any content on the most popular social networks in the Republic of Moldova (<i>Facebook, Twitter, Google+, LinkedIn, and Odnoklassniki</i>). |
| FR 06.02 | M | It will be possible to publish the dynamically generated documents, categories of the CEC Official Website, documents placed in the content, events, press releases, etc. |
| FR 06.03 | M | The appearance of publications placed on social networks will be designed in a way to ensure they are distinguished and perceived (including the use of CEC brandbook). |

5.1.7 UC07: Place comments, messages, requests

Functional requirements for visitors' feedback component of the CEC Official Website are presented in Table 5.7.

Table 5.7. Functional requirements for the UC07 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| FR 07.01 | M | <i>The Internet Users</i> shall possess a functionality to comment any document content in a category for which the right to place comments is activated. |
| FR 07.02 | M | A comment represents a textual message that an authenticated user can place through the comment mechanism located in the content categories of the CEC Official Website <i>for</i> which the option to place comments is activated. |
| FR 07.03 | M | In order to place comments, <i>Internet Users</i> shall be authenticated. External mechanisms will be implemented to this end, such as: <i>Google, LinkedIn, Twitter, Facebook, Odnoklassniki, VeriSign</i> , etc. |
| FR 07.04 | M | Depending on the information space pertaining to the content element of the commented CEC Official Website, access to comments will be granted to the <i>Content Administrator</i> of the space in question and <i>to the System Administrator</i> . |
| FR 07.05 | M | <i>The System Administrator</i> will have access to any comments placed in any content category of the CEC Official Website. |
| FR 07.06 | M | A copy of the comment may be sent automatically to the Email of the <i>Content Administrator</i> (each <i>Content Administrator</i> will configure its |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| | | Email to receive comments) in case of configuring this preference. |
| FR 07.07 | M | The CEC Official Website will notify the users assigned with administration roles of Website categories <i>for</i> which comments were received. |
| FR 07.08 | M | The notification about receiving a new comment for consideration will be displayed through <i>the Dashboard</i> of the <i>Content Administrator</i> . |
| FR 07.09 | M | A comment placed by an authenticated user will contain the following categories of data and Metadata: <ul style="list-style-type: none"> • date of placing the comment; • identity data of the comment sender; • Email of the comment sender; • physical location (IP address and geographical area) the comment was sent from; • identification data for the comment recipient; • the commented content element; • URL reference to the commented content element; • comment. |
| FR 07.10 | M | <i>Internet Users</i> shall possess feedback forms to send their suggestions (for the categories where a corresponding template will be applied). |
| FR 07.11 | M | The CEC Official Website will save the feedback message and send automatically a notification through the relevant <i>Content Administrator</i> Email. |
| FR 07.12 | M | Depending on the information space assigned to the feedback form, access to message will be granted to the <i>Content Administrator</i> . |

5.1.8 UC08: Use Dashboard

Functional requirements for the Dashboard intended for the users assigned with administration roles in the CEC Official Website are presented in Table 5.8.

Table 5.8. Functional requirements for the UC08 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| FR 08.01 | M | The <i>Backend component</i> of the CEC Official Website will deliver to users with administration roles a <i>Dashboard</i> through which they will be notified about important business events and be granted fast access to their details. |
| FR 08.02 | M | Among the categories of business events displayed on the <i>Dashboard</i> we can mention the following: <ul style="list-style-type: none"> • notifications by the system; • unprocessed comments; • content information pending approval for publication. |
| FR 08.03 | M | <i>Dashboard</i> user with a <i>Content Administrator</i> role will display only the |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| | | business events afferent to its administered space and notifications addressed to it. |
| FR 08.04 | M | <i>The Dashboard</i> user with a <i>System Administrator</i> role will display business events afferent to the CEC Official Website and notifications addressed to it. |
| FR 08.05 | M | <i>The Dashboard</i> will group the business events, displaying them as indicators with aggregated values (<i>for example, Unread notifications by the system -28; New comments – 15; Publications for approval – 8</i>) which will contain hypertext reference to access the details. |
| FR 08.06 | M | Upon accessing the hypertext reference afferent to the aggregated value of business event category, the CEC Official Website will provide a list of respective events and functionalities for their processing. |
| FR 08.07 | M | The CEC Official Website will offer functionality for configuring the appearance and content of <i>the Dashboard</i> for each user separately. |

5.1.9 UC09: Manage the Website content

Functional requirements for the information content management mechanism of the CEC Official Website are presented in Table 5.9.

Table 5.9. Functional requirements for the UC09 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 09.01 | M | The content information will be placed in leaf-categories of the structure tree Menu of the CEC Official Website. |
| FR 09.02 | M | Based on the template defined by the <i>System Administrator</i> structure category, the <i>BackEnd</i> component will deliver functionalities for the administration and publication of its content. |
| FR 09.03 | M | Before publishing a content category, its URL-ul for public interface of the CEC Official Website will be accessed by authenticated users only assigned with roles and rights for its administration. |
| FR 09.04 | M | <i>The Content Administrator</i> shall possess the functionality to add, suppress, hide, and publish content documents within content categories. |
| FR 09.05 | M | A document with “hidden” (unpublished) status found at the stage of being written will be accessed on the basis of a URL by the authorised users only assigned with roles and rights over them. |
| FR 09.06 | M | For any content document the CEC Official Website will allow displaying generic images, files, photo gallery, and Multimedia gallery. |
| FR 09.07 | M | For writing content documents, exclusively visual mechanisms will be used based on <i>WYSIWYG</i> type Editors. |
| FR 09.08 | M | The <i>WYSIWYG</i> Editor will allow visual text formatting, defining the hypertext references, writing tables, uploading and inserting images, uploading and inserting hypertext reference files, etc. |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| FR 09.09 | M | The CEC Official Website shall possess a visual functionality to move a content document with all the information attached thereto from one content category to another. |
| FR 10.10 | M | The CEC Official Website will suggest compatible categories (depending on their templates) where a relevant document could be moved. |

5.1.10 UC10: Manage the CEC Meeting Agenda

Functional requirements afferent to managing the CEC meeting agenda are presented in Table 5.10.

Table 5.10. Functional requirements for the UC10 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 10.01 | M | The CEC Official Website will provide a mechanism for managing the CEC meeting agenda. |
| FR 10.02 | M | A CEC meeting agenda may be administered by <i>the System Administrator or Content Administrator</i> assigned with such a right. |
| FR 10.03 | M | The Agenda may contain documents inserted explicitly in the agenda (defined for the agenda only) or acquired from the CEC Official Website content. |
| FR 10.04 | M | Press releases, CEC decisions, other categories of documents can be also acquired from the CEC Official Website content. |
| FR 10.05 | M | The acquiring of content documents assumes the automatic creation of a link with them (ensuring direct access to them from the content of the meeting agenda). Nonetheless, an additional form will be prepared to fill in a document specific only for the meeting agenda (<i>for example, meeting Protocol, meeting decisions, etc.</i>). |
| FR 10.06 | M | Only the meeting agenda having the “public” status and the documents inserted therein will be published on the CEC Official Website. |

5.1.11 UC11: Manage CEC decisions

Functional requirements for managing the decisions adopted by CEC are presented in Table 5.11.

Table 5.11. Functional requirements for the UC11 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 11.01 | M | The CEC Official Website will provide a mechanism dedicated to the management of decisions adopted by CEC. |
| FR 11.02 | M | To define the properties of these categories of documents all current Metadata versions of the CEC Official Website will be used. |
| FR 11.03 | M | The following categories of Metadata will be completed for each CEC decision: |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| | | <ul style="list-style-type: none"> • name; • number; • date it was adopted; • type; • summary; • content; • files attached; • reference to its publication in the <i>State Register of Legal Acts of the Republic of Moldova</i>. |
| FR 11.04 | M | Until the CEC decision form is completed the decision will have a restricted status. |
| FR 11.05 | M | The System will allow defining the status of public access upon the completion of CEC decision preparation. |
| FR 11.06 | | The CEC decisions with public status will be displayed automatically in the public interface of the CEC Official Website. |
| FR 11.07 | M | The CEC decision will be conceptualised as a file so that many documents could be inserted (a file with decision document, opinions, protocols, etc.). |
| FR 11.08 | M | A CEC decision placed on the CEC Official Website shall have the possibility to be inserted in CEC meeting agenda. |
| FR 11.09 | M | The CEC Official Website will allow inserting references to the legislative act adopted in the <i>State Register of Legal Acts of the Republic of Moldova</i> (http://lex.justice.md). |
| FR 11.10 | M | Public Interface of the CEC Official Website will provide a mechanism devoted to searching and viewing the content of decisions adopted by CEC, making use of the values of all categories of Metadata and having secured searching facilities in the results found. |

5.1.12 UC12: Manage comments/messages

Functional requirements for processing the comments received from users of the CEC Official Website are presented in Table 5.12.

Table 5.12. Functional requirements for the UC12 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 12.01 | M | The CEC Official Website will notify the users with administration roles on all new comments and messages sent by Internet Users. |
| FR 12.02 | M | The CEC Official Website will place in the space for administration of each user with administration roles comments afferent to the information space managed by it, which were sent by Internet Users. |
| FR 12.03 | M | Users assigned with administration roles of the CEC Official Website shall possess a convenient mechanism to access the list of comments received by them. |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 12.04 | M | A comment may have two statuses that a user with administration roles within the CEC Official Website may change (from one status to another): <ul style="list-style-type: none"> • new comment; • processed comment. |
| FR 12.05 | M | All comments placed through the CEC Official Website have initially the status “ <i>New Comment</i> ”. |
| FR 12.06 | M | The CEC Official Website will notify through <i>the Dashboard</i> the user with administration roles about receiving new comments or unprocessed comments. |
| FR 12.07 | M | The user with administration roles – recipient of the comment, shall possess the option to suppress a comment. |
| FR 12.08 | M | Managing a comment involves the following actions: the user with administration roles accesses the comment, reads it, suppresses it or changes its status (in “ <i>Published Comment</i> ”). |
| FR 12.09 | M | A comment may be considered as processed when it was suppressed or when the user with administration roles assigned the status “ <i>Processed Comment</i> ” to it. |
| FR 12.10 | M | The user with administration roles – recipient of the comment, shall possess the option to write and send Email messages in response to a comment (when activating the reference with the Email address of the comment sender a form for message writing and sending will be also activated). |
| FR 12.11 | M | The user with administration roles shall possess a functionality to configure the Email address where all newly entered comments will be automatically sent. |

5.1.13 UC13: Receive notifications

Functional requirements afferent to receiving notifications sent by the CEC Official Website to authenticated users are presented in Table 5.13.

Table 5.13. Functional requirements for the UC03 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| FR 13.01. | M | <i>The authenticated users</i> will be able to receive notifications at the Email address stated in their profile from <i>MPass</i> , <i>Active Directory</i> or the CEC Official Website. |
| FR 13.02. | M | All notifications will be stored also in <i>the personal Dashboard</i> of the authorised user of <i>BackEnd</i> component of the CEC Official Website. |

5.1.14 UC14: Manage the structure

Functional requirements of the mechanism for managing the structure of the CEC Official Website are presented in Table 5.14.

Table 5.14. Functional requirements for the UC14 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| FR 14.01 | M | The CEC Official Website will deliver a mechanism for defining and managing structure categories (create, change, publish, hide, suppress). |
| FR 14.02 | M | A structure category may contain an unlimited number of subordinated categories. |
| FR 14.03 | M | The information content of any category will be divided into three lanes. |
| FR 14.04 | M | The left lane and the right lane are reserved for dynamic blocks and banner batteries. The central lane – for content information. |
| FR 14.05 | M | When the information placed on the left lane is not defined, the central lane will be expanded to cover the left lane. When the information placed on the right lane is not defined, the central lane will be expanded to cover the right lane. If the information placed on the left lane and the right lane is not defined, the central lane will be expanded to cover the whole page. |
| FR 14.06 | M | The CEC Official Website will deliver a mechanism for structure reorganisation. |
| FR 14.07 | M | The reorganisation of the CEC Official Website structure will be based on exclusive visual mechanisms allowing to move the subcategories with their whole content to other categories. |
| FR 14.08 | M | The CEC Official Website will suggest compatible categories (depending on their templates) where a relevant subcategory can be moved. |
| FR 14.09 | M | <i>The System Administrator</i> shall possess a functionality to define the design preferences when the content category is displayed in the public interface of the CEC Official Website <i>(for example, at least the chromatic scale and the style of displaying)</i> . |
| FR 14.10 | M | For any content category, <i>the System Administrator</i> will be able to activate/deactivate the generation of RSS flows, activate/hide the form for placing the comments, activate/hide the generation of content alphabetical index, activate/hide the generation of archive references, activate/hide the option for rating assessment, activate/hide the date of publication and bibliographical elements, etc. |
| FR 14.11 | M | A content category cannot be suppressed if it comprises at least one content document. |
| FR 14.12 | M | The CEC Official Website will provide a mechanism to create banner batteries. |
| FR 14.13 | M | The image, suggestive text, URL reference shall be stated for each banner battery. |
| FR 14.14 | M | The mechanism for managing the banner batteries will allow defining the principles for presenting the banners from a battery (all in the mentioned sequence, a number N out of M at random, a number M |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| | | out of N with automated change according to an interval for displaying). |
| FR 14.15 | M | <i>The System Administrator</i> will be able to place banner batteries in the whole content of the CEC Official Website (dynamic blocks on the Main Page, specific content categories and subcategories, etc.). |

5.1.15 UC15: Authorise content publication/modification

Functional requirements for the mechanism for approving the content for publication by the users with administration roles of the CEC Official Website are presented in Table 5.15.

Table 5.15. Functional requirements for the UC15 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 15.01 | M | Any document, CEC meeting agenda, information content must be subject to an approval procedure for publication regardless of the user who created the content (the user who places the content may have the right to approve its publication). |
| FR 15.02 | M | The CEC Official Website will display in its public interface only the content approved for publication. |
| FR 15.03 | M | Only <i>Content Administrator level</i> Users with specific rights shall have the right to authorise the publication of information in the CEC Official Website content (including the content generated by them). |
| FR 15.04 | M | The CEC Official Website will allow assigning the right of approval for publication of content to specific users from the group of <i>Content Administrators</i> . |
| FR 15.05 | M | The content candidate for publication will be accessed from public interface of the CEC Official Website only by the users with administration roles over the corresponding information space and by all users with the role of <i>System Administrator</i> . |
| FR 15.06 | M | The users with the right to approve the content <i>for publication</i> shall possess in the space for the administration of the CEC Official Website an area in the <i>Dashboard</i> where the number of content documents will be displayed, which have been submitted to be approved for publication depending on their nature. |
| FR 15.07 | M | By accessing the number of documents candidates for publication, the user with the right to approve documents for publication shall see the list of all documents candidates for publication, having the option to preview and approve/reject their publication. |
| FR 15.08 | M | The approval for publication will be carried out by changing the status of the content candidate for publication (by ticking a dedicated checkbox). |
| FR 15.09 | M | The publication can be cancelled by changing the status of the content candidate for publication (by ticking a dedicated checkbox), with the possibility to insert the reason for rejection. |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| FR 15.10 | M | For each approved content, the CEC Official Website will record the info on the user who authorized its publication. |
| FR 15.11 | M | The CEC Official Website will notify the Issuer of the content candidate for publication about its authorization for publication or rejection. |

5.1.16 UC16: Configure the Main Page

Functional requirements for the mechanism for configuring the Main Page of the CEC Official Website are presented in Table 5.16.

Table 5.16. Functional requirements for the UC16 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| FR 16.01 | M | <i>The BackEnd</i> component will deliver a mechanism for configuring the appearance of the Main Page of the CEC Website. |
| FR 16.02 | M | <i>The System Administrator</i> shall possess a mechanism to view/deactivate the linguistic versions of the CEC Official Website. |
| FR 16.03 | M | <i>The System Administrator</i> shall possess a mechanism for defining the elements (hiding/displaying/ordering) placed on the Main Page (voting questionnaires, dynamic blocks, KPIs, banner batteries, etc.). |
| FR 16.04 | M | <i>The BackEnd</i> component will allow defining the areas for element publication (left lane, central lane and right lane). The central lane only shall be used by default. |
| FR 16.05 | M | <i>The System Administrator</i> shall possess a mechanism for configuring and placing/hiding the voting questionnaires on the Main Page of the CEC Official Website. |
| FR 16.06 | M | <i>The System Administrator</i> shall possess a mechanism for configuring and placing /hiding dynamic blocks on the Main Page of the CEC Official Website. |
| FR 16.07 | M | <i>The System Administrator</i> shall possess functionality for configuring and placing /hiding banner batteries on the Main Page of the CEC Official Website. |
| FR 16.08 | M | The BackEnd component will provide functionalities for placing the values of KPIs on the Main Page. |
| FR 16.09 | M | The BackEnd component will allow configuring the URL references of KPIs, accessing the ones based on which they were generated. |
| FR 16.10 | M | The method of locating the elements in the Main Page lanes of the CEC Official Website shall be exclusively visual (drag & drop the element with the mouse in the desired lane and sequence). |
| FR 16.11 | M | The CEC Official Website will deliver a mechanism to customise the Main Page appearance depending on the specific calendar date (<i>for example, customising the Website appearance on the occasion of public holidays or current important events</i>). |

5.1.17 UC17: Configure information blocks

Functional requirements for the mechanism for configuring dynamic blocks with information of the CEC Official Website are presented in Table 5.17.

Table 5.17. Functional requirements for the UC17 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 17.01. | M | The BackEnd component will deliver a mechanism for defining and managing the information blocks displayed on the CEC Official Website (create, change, publish, hide, suppress). |
| FR 17.02. | M | An information block represents a mechanism for grouping and presenting the information of common logic (<i>for example, a list of news, a list with CEC decisions, a list of useful references, etc.</i>). |
| FR 17.03. | M | The CEC Official Website <i>shall not limit the System Administrator in</i> the number of defined information blocks. |
| FR 17.04. | M | The information blocks will be defined for the Main Page and for any content category of the CEC Official Website. |
| FR 17.05. | M | Upon defining a new information block the following information shall be provided: <ul style="list-style-type: none">• block name in Romanian, English and Russian;• hypertext reference to the block name (optionally);• block design preferences (colour, frame, etc.).• block location lane (left, central, right). |
| FR 17.06. | M | An information block will allow for the following actions to be performed: <ul style="list-style-type: none">• insert text with images written in WYSIWYG Editor;• insert automatically N latest elements added in specified categories;• insert automatically N elements as per the popularity;• insert explicit elements from specified categories;• insert advertising banner batteries;• insert a combined content (text, automatically, explicitly, banners, rating). |
| FR 17.07. | M | Suppressing the constitutive elements of a block (except for the text written directly in the block) does not involve their physical suppression in content categories they were acquired from. |
| FR 17.08. | M | For the elements inserted in an information block it is required to specify the method of their displaying, using the following properties: <ul style="list-style-type: none">• activation/hiding block design elements (title, colour, frame etc.);• hiding/displaying the comment number element;• hiding/displaying the number of accesses element;• hiding/displaying the rating element;• hiding/displaying the publication date element; |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| | | <ul style="list-style-type: none"> • hiding/displaying details element (summary, author, etc.); • hiding/displaying the suggestive image element. • hiding/displaying the notification that the element is new. |
| FR 17.09. | M | <p>For the elements inserted in an information block the sequence of their display shall be specified:</p> <ul style="list-style-type: none"> • sequence defined explicitly by <i>the System Administrator</i>; • alphabetical order; • date of elements publication; • rating; • number of accesses. |
| FR 17.10. | M | An information block will be located on any of CEC Official Website lanes (left, central and right). |
| FR 17.11. | M | For the central lane it is necessary to define the number de blocks located in one line. |
| FR 17.12. | M | If the right lane or the left lane is not used, the blocks from the central lane will cover the unused space (left lane, right lane or both). |
| FR 17.13. | M | The CEC Official Website will deliver an exclusively visual mechanism for placing the information blocks in the content of the Website (the block will be located in the desired place and sequence by using the mechanism drag & drop. |

5.1.18 UC18: Manage Metadata

Functional requirements of the mechanism for managing the classifiers, nomenclatures and Metadata of the CEC Official Website are presented in Table 5.18.

Table 5.18. Functional requirements for the UC18 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| FR 18.01. | M | The System shall possess a mechanism for managing nomenclatures, classifiers containing all DB Metadata. |
| FR 18.02. | M | Where appropriate, classifiers managed by the National Bureau of Statistics (<i>CAEM Rev.2, CUATM, CFOJ, CFP</i> , etc.) will be acquired in full, as well as other official classifiers managed by <i>CPAs</i> and <i>LPAs</i> of the Republic of Moldova. |
| FR 18.03. | M | The right to operate changes will be limited for official classifiers. For this category of classifiers changes will be operated only by the <i>CPAs</i> that administer them. |
| FR 18.04. | M | For the system of internal nomenclatures and Metadata, the IT solution will deliver a mechanism for defining their dynamic administration. |
| FR 18.05. | M | The System will not allow any suppression of categories of Metadata if they are used at least in one entry of the database. |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| FR 18.06. | M | The System of Metadata will cover the CEC Organigram (subdivisions and functions) and profile of the CEC management and members. |
| FR 18.07. | M | The System will allow defining the validity period for each category of Metadata. |

5.1.19 UC19: Manage users, roles, rights.

Functional requirements for the component of administration of roles afferent to users with administration functions of the CEC Official Website content are presented in Table 5.19.

Table 5.19. Functional requirements for the UC19 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| FR 19.01 | D | The CEC Official Website will integrate the IT Subsystem <i>MPass</i> within <i>MCloud</i> for the authentication of users. |
| FR 19.02 | D | The CEC Official Website will integrate the IT Subsystem <i>SAISE Admin</i> for the authentication and authorisation of users. |
| FR 19.03 | D | The CEC Official Website will integrate the CEC <i>LDAP</i> solution for the authentication of users. |
| FR 19.04 | M | The CEC Official Website will provide its own solution of authentication through the <i>User Name+Password mechanism</i> . |
| FR 19.05 | M | <i>The System Administrator</i> will define preferences of the acceptable authentication mechanism (only one out of three or a multi-criteria selection). |
| FR 19.06 | M | The CEC Official Website shall possess a flexible and dynamic mechanism for defining the roles and rights of users with functions of content administration. |
| FR 19.07 | M | The mechanism for defining the roles and rights will allow specifying the right of access to the level option of User Interface and the CEC Official Website information content. |
| FR 19.08 | M | The CEC Official Website will allow assigning several roles to a user. |
| FR 19.09 | M | The CEC Official Website will contain an implicit category of users created by the Developer, and credentials for them are handed upon delivery for the category of Super-administrator. |
| FR 19.10 | M | <i>The System Administrator</i> will be able to assign/withdraw roles to any user of the CEC Official Website. |
| FR 19.11 | M | <i>The System Administrator</i> will indicate the space where the users with administration roles will place the content. |

5.1.20 UC20: Generate reports

Functional requirements for the mechanism for retrieval of activity reports of the CEC Official Website are presented in Table 5.21.

Table 5.20. Functional requirements for the UC20 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 20.01. | M | The CEC Official Website will deliver flexible reporting functionality so that the administrative roles can manage the system. |
| FR 20.02. | M | The reporting mechanism shall be able to offer a series of management, statistical and ad-hoc reports, so that the administrative roles could monitor the system activity and status. |
| FR 20.03. | M | This reporting is necessary within the whole system, including: <ul style="list-style-type: none"> • nomenclatures and classifiers; • DB entries; • users' activity; • access and security permissions. |
| FR 20.04. | M | The System shall make available to administrative roles a series of standard configurable reports and producing ad-hoc reports when necessary shall be easy to authorise. |
| FR 20.05. | M | The System will offer a set of predefined reports (as a rule, implemented physically in the content of the IT system) subject to audit and analysis of the CEC Official Website activity. This category of reports may include: <ul style="list-style-type: none"> • performance report of the CEC Official Website; • performance report of the <i>Content Administrator</i>; • statistics of accessing the CEC Official Website. |
| FR 20.06. | M | The Developer will integrate in the CEC Official Website content at least 10 categories of static reports with the application of aggregation levels. |
| FR 20.07. | M | A user, who views a report within the system, shall be able to export it to an external file. |
| FR 20.08. | M | The CEC Official Website will integrate <i>Google Analytics</i> with the aim to collect primary data and retrieve statistics afferent to the use of CEC Official Website sections. |

5.1.21 UC21. Other administration activities

Functional requirements for the activities of CEC Official Website administration are presented in Table 5.21.

Table 5.21. Functional requirements for the UC24 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 21.01. | M | The System shall allow the administrative roles to acquire, display and reconfigure the parameters of the CEC Official Website and system settings. |
| FR 21.02. | M | The System shall allow the administrative roles to: <ul style="list-style-type: none"> • allocate functions to users and roles; • allocate one or more Users to one role. |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 21.03. | M | For each user with access to the space for CEC Official Website administration, the Administrator manages its profile. |
| FR 21.04. | M | The Administrator will formulate rules of access to the interface programme and DB content (access roles and rights) in the profile of the user with authorised access to the administration space. |
| FR 21.05. | M | The Administrator shall access the system logs. |
| FR 21.06. | M | The Administrator shall make backups and restore the system functionality based on these backups; |
| FR 21.07. | M | The Administrator shall perform all activities for ensuring functionalities in proper conditions of the CEC Official Website. |

5.1.22 UC22: Notify the users

Functional requirements for the notification mechanism afferent to the CEC Official Website are presented in Table 5.22.

Table 5.22. Functional requirements for the UC22 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 22.01. | M | The CEC Official Website will offer two strategies of notification: Email or placing a notification in the Dashboard. |
| FR 22.02. | M | The authenticated users (regardless their assigned roles) will be able to configure their preferred means of notification. |
| FR 22.03. | M | The CEC Official Website will notify <i>the System Administrator</i> on the content information received for review and approval for publication placed by <i>the Content Administrator</i> . |
| FR 22.04. | M | The CEC Official Website will notify <i>the System Administrator</i> on any issues affecting the IT System performance and availability. |
| FR 22.05. | D | The CEC Official Website will integrate the <i>SAISE Admin</i> specialised service for sending notifications. |

5.1.23 UC23: Publish statistics, KPIs

Functional requirements afferent to the mechanism for publishing the statistical information on the CEC Official Website (KPIs) operation status are presented in Table 5.23.

Table 5.23. Functional requirements for the UC23 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 23.01. | M | The CEC Official Website shall issue on a regular basis a notification about its functional status. In case the notification is no longer received by the monitoring systems, the latter would alert the empowered technical staff. |
| FR 23.02. | M | Every four hours the CEC Official Website shall display the total number of <i>CEC</i> decisions published on the site. |

| Identifier | Binding level | Functional requirements description |
|------------|---------------|---|
| FR 23.03. | M | Every four hours the CEC Official Website shall display the total number of <i>CEC</i> meeting agenda published on the site. |
| FR 23.04. | M | The CEC Official Website will publish instantly the number of <i>authenticated users</i> and the number of anonymous users currently connected to the CEC Official Website. |
| FR 23.05. | M | The CEC Official Website will ensure a hypertext reference to the <i>KPI</i> value which, once accessed, will display the indicator disaggregation (lists of regulatory acts subject to review, lists of legislative acts subject to review, etc.). |
| FR 23.06. | M | The CEC Official Website will publish all estimated KPIs and statistical reports in specialised sections of the Website http://www.cec.md . |
| FR 23.07. | M | <i>The System Administrator</i> will be able to define and publish other categories of KPIs. |
| FR 23.08. | M | The Offeror will configure at least 20 categories of KPIs defined by the Beneficiary. |

5.1.24 UC24: Logging events

Functional requirements for the event logging mechanism within the CEC Official Website are presented in Table 5.24.

Table 5.24. Functional requirements for the UC24 use case.

| Identifier | Binding level | Functional requirements description |
|------------|---------------|--|
| FR 24.01. | M | The IT System will contain a mechanism for logging all business events related to the use of CEC Official Website. |
| FR 24.02. | M | <i>The System Administrator</i> will be able to configure all logging strategies related to business events afferent to the use of the CEC Official Website. |
| FR 24.03. | M | The CEC Official Website will furnish a mechanism for report generation afferent to event logging. |
| FR 24.04. | D | The CEC Official Website will integrate a specialized <i>SAISE Admin service</i> for event logging. |

5.2. Non-functional Requirements for the IT system

5.2.1 General and Performance Requirements

The general system requirements and performance requirements are defined by the policies and strategies developed and adopted in the Republic of Moldova. It is worth mentioning that these acts are stemming from the industry best practices and comprise many organisational measures, as well as a series of technical measures.

The general system requirements specific for the CEC Official Website are presented in Table 5.25.

Table 5.25. General system requirements for the CEC Official Website.

| Identifier | Binding level | Description of performance requirement |
|------------|---------------|--|
| TGEN 001 | M | The User Interface and the CEC Official Website information content will be prepared in three linguistic versions: Romanian (by default), English and Russian. |
| TGEN 002 | M | The Romanian version of User Interface and information content of the CEC Official Website shall employ the Romanian diacritical marks. |
| TGEN 003 | M | The user's Interface elements shall comply with Level A of <i>Web Content Accessibility Guidelines (WCAG) 2.0</i> . |
| TGEN 004 | M | The CEC Official Website shall generate the content pages taking account of the best optimization practices (SEO). |
| TGEN 005 | M | The CEC Official Website shall deliver a responsive User Interface depending on the device used (PC, tablet, smartphone). |
| TGEN 006 | M | The User Interface of the CEC Official Website shall preserve (and improve) functionalities for viewing the whole content migrated from the old version into the new version of the Website. |
| TGEN 007 | M | The CEC Official Website shall resize automatically any image placed in the content depending on system configurations. Resizing involves physical change of a large image, making it smaller to fit the requirement set by the content of the CEC Official Website. |
| TGEN 008 | M | The CEC Official Website shall have optimised user Interface for such devices as smartphones and tablets. |
| TGEN 009 | M | The CEC Official Website shall integrate in its public interface advanced statistics mechanisms furnished by <i>Google Analytics</i> system. |
| TGEN 010 | M | The CEC Official Website shall contain embedded functions to perform global search or by the Metadata system required values. The procedures for information and records retrieval will involve simple search (specifying some search series) or more complex search, through which it is possible to ensure more precise filtering of information. Regardless of the type of the information searched, the user shall apply the same query and information retrieval method for all sections of the CEC Official Website. |
| TGEN 011 | M | Exploring and searching the information in the CEC Official Website content will be adapted to ensure maximum comfort in case of using touch-sensitive screens. |
| TGEN 012 | M | The User Interface shall ensure filtering the records that match the search criterion for events, documents published, CEC meetings, CEC decisions published. |
| TGEN 013 | M | The System shall guarantee an agreed level of services (SLA) with general availability of at least 95%. |
| TGEN 014 | M | The CEC Official Website shall be developed on the basis of at least three-level architecture. |
| TGEN 015 | M | The CEC Official Website <i>shall provide WEB interfaces</i> for external access. |

| Identifier | Binding level | Description of performance requirement |
|------------|---------------|--|
| TGEN 016 | M | The CEC Official Website shall have an architecture based on SOA services. |
| TGEN 017 | M | The solution potentially variable information (<i>for example, different parameters, methods of data storage, methods of connection with external services, classifiers, etc.</i>) shall be configurable and would not require solution recompilation or direct interventions into the DB. |
| TGEN 018 | M | The IT System shall use open standards for formats and communication protocols. |
| TGEN 019 | M | The parts of services exposed to the public by the CEC Official Website shall be technologically neutral (Operating system, Internet browser, etc.). |

Performance requirements specific for the CEC Official Website are defined in Table 5.26.

Table 5.26. Performance requirements set for the IT System.

| Identifier | Binding level | Description of Performance Requirements |
|------------|---------------|--|
| PERF 001 | M | The average time for server response shall not exceed four seconds upon the system nominal load. |
| PERF 002 | M | The System shall enable the concurrent activity of more than 30 Users from the <i>System Administrator and Content Administrator category</i> . |
| PERF 003 | M | The System shall enable the concurrent activity of more than 100000 single Internet users. |
| PERF 004 | M | The System will allow concurrent activity of at least 30 Users of <i>System Administrator, Content Administrator</i> level and up to 10000 Internet Users (on the day of elections their number could be 50000). |
| PERF 005 | M | More than 15,000 documents will be inserted and processed annually in the CEC Official Website content (depending if elections are held or not during one year or another). |
| PERF 006 | M | Prior to the delivery of the IT solution, CEC Official Website performance tests shall be conducted. |
| PERF 007 | M | Performance testing shall include at least two components: system <i>load testing</i> and system <i>stress testing</i> . |
| PERF 008 | D | It is desirable to perform CEC Official Website penetration tests. |

5.2.2 Security and protection requirements

The System shall comply with the technical requirements imposed on IT Systems by the *Moldovan Standard SM EN ISO/IEC 27002:2017 Information Technology. Security Techniques. Code of best practices for information security management*.

The IT solution shall comply in full with the security and protection requirement defined Table 5.27.

Table 5.27. Requirements for CEC Official Website security and protection.

| Identifier | Binding level | Description of Security and Protection Requirement |
|------------|---------------|---|
| SR 001 | M | The IT System shall guarantee full storage and integrity of information content of the CEC Official Website. |
| SR 002 | M | Public information shall be made available to anonymous users. |
| SR 003 | M | Access to functions granted to non-authenticated users shall be monitored using protection means against overstressing the service by one or several network hubs. |
| SR 004 | M | All fields of forms filled in by users must be validated by type of both the client and server. |
| SR 005 | M | When the system communicates with other systems electronic signatures of the third IT systems shall be used for identity and authentication. |
| SR 006 | M | For sensitive transactions the official <i>time stamping</i> service shall apply immediately after their performance. |
| SR 007 | M | The System shall be protected against <i>OWASP Top 10 vulnerabilities</i> . |
| SR 008 | M | The System shall ensure confidentiality of data transmitted-received via communications channels. |
| SR 009 | M | Access to the IT system shall be monitored. |
| SR 010 | M | Access to functions for authorised users shall be granted by their authentication using any of the following means: User + Password, digital certificate, active directory, IP address for connection or combinations of these means. |
| SR 011 | M | Data exchange within the system shall be carried out through reliable/secured channels only. |
| SR 012 | M | Users' actions shall be entered into electronic logs. |
| SR 013 | M | The System shall make a periodic sound signal that tells about its functional status. |

5.2.3 Requirements for software, hardware and communication channels

Table 5.28 contains the assurance requirements for software, hardware and communications technology submitted by the CEC Official Website.

Table 5.28. Assurance requirements for software, hardware and communications technology of the CEC Official Website.

| Identifier | Binding level | Description of requirements for software, hardware and communications technology solutions |
|------------|---------------|---|
| SHC 001 | M | The System shall have the possibility to be installed on both dedicated servers and on Cloud solutions. |
| SHC 002 | M | The Developer shall demonstrate the possibility to install the IT solution in <i>MCloud</i> infrastructure. |
| SHC 003 | M | The System shall be accessed through communication channels of at |

| Identifier | Binding level | Description of requirements for software, hardware and communications technology solutions |
|------------|---------------|--|
| | | least 128kbps. |
| SHC 004 | M | The System will be developed based on some platforms largely accepted in the industry for which there are professionals in the Republic of Moldova. |
| SHC 005 | M | The System will deliver strong mechanisms for ensuring security for the authentication and authorisation procedures of users (name with implementation where appropriate) of <i>Active Directory technology</i> . |
| SHC 006 | M | The System shall be able to be virtualised at the level of software-hardware. |
| SHC 007 | M | It is necessary to demonstrate the capacity of virtualization via the delivery of a system image to the <i>Beneficiary</i> that could be uploaded and become operational with minimum configurations on one of the virtualization solutions available on the market. |
| SHC 008 | M | The System shall be tolerant to errors by offering support for clustering and fail over for the whole platform and its components. |
| SHC 009 | M | It is necessary that the service parts exposed to the public are technologically neutral. |
| SHC 010 | M | Verification shall be done by using a set of (modern) platforms expecting that the performance parameters are similar or even better than those contained in reference configuration. |
| SHC 011 | D | It is preferable that the Offeror of the Server solution does not impose constraints of the Beneficiary in terms of using some specific software platforms. It would be desirable that the IT system can be operated on both <i>Windows</i> and <i>Unix (Linux, Free BSD, Solaris, etc.)</i> . It would be also desirable that the IT solution is built using open solution, which are not subject to proprietorship constraints specific for Web applications (<i>XML, XSL, XHTML, WSDL, SOAP, LDAP, J2EE, etc.</i>) so that the Beneficiary could develop it at a later stage. |
| SHC 012 | D | It is preferable that the Offeror of the IT solution develops the CEC Official Website based on LAMP/XAMP technology. PostgreSQL could be used for DBMS. |
| SHC 013 | M | If the software platform used to develop and operate the <i>CEC Website</i> is based on commercial IT solutions, the Developer will include in the price offer the overall amount charged for licensing, as well as the overall licensing costs for: <ul style="list-style-type: none"> • doubling the number of users; • doubling the number of processing units (CPU or CPU kernels); • doubling the number of hubs of that type. |
| SHC 014 | M | The WEB Explorer is the recommended generic software for the operation and interaction with the CEC Official Website. |
| SHC 015 | M | The System shall be compatible with at least two the most recent versions of the following WEB browsers: <i>MS Internet Explorer/MS</i> |

| Identifier | Binding level | Description of requirements for software, hardware and communications technology solutions |
|------------|---------------|--|
| | | <i>Edge, Mozilla Firefox, Google Chrome, Safari and Opera.</i> |
| SHC 016 | M | Compatibility with <i>Microsoft Internet Explorer/MS Edge</i> is binding. |
| SHC 017 | D | The CEC Official Website shall incorporate a Heart-beat service to periodically communicate the system normal work status. |
| SHC 018 | M | The System shall include configurable means for technical logging. |
| SHC 019 | M | The System shall be able to produce at least the following levels of technical logging: <i>info; warning; critic; error.</i> |
| SHC 020 | M | The Developer shall list the means to be used for system troubleshooting. |
| SHC 021 | M | The Developer shall prepare means that facilitate the system administration functions: <ul style="list-style-type: none"> • starting the system components; • stopping the system components; • restarting the system components; • creating a DB back-up; • recovery of data using the specified back-up; • refreshing the system operating memory. |
| SHC 022 | M | The System will be operated in TCP/IP networks and, especially, in HTTPS. |
| SHC 023 | M | <i>The Developer</i> shall suggest other network and utility services necessary for system operation. |

5.2.4 Documentation Requirements of the IT system

The IT solution will be accompanied by a full set of documentation of the IT system that covers the sections included in Table 5.29.

Table 5.29. Requirements for documentation of the CEC Official Website.

| Identifier | Binding level | Description of the requirement for e-Petition documentation |
|------------|---------------|---|
| DOC 001 | M | <i>The Developer</i> shall prepare and publish interactive guidance materials included in the administration interfaces of the CEC Official Website in Romanian. |
| DOC 002 | M | <i>The Developer</i> shall prepare and deliver User's Manual in Romanian. |
| DOC 003 | M | <i>The Developer</i> shall prepare and deliver Administrator's Manual in Romanian. |
| DOC 004 | M | <i>The Developer</i> shall prepare training guidance for users assigned with <i>Content Administrator and System Administrator roles.</i> |
| DOC 005 | M | <i>The Developer</i> shall prepare guidance for using the Help Desk Platform for reporting the deficiencies and errors during the defect liability, maintenance and support period. |

| Identifier | Binding level | Description of the requirement for e-Petition documentation |
|------------|---------------|---|
| DOC 006 | M | The Developer shall prepare and deliver the Guide on system installation and configuration (to include at least guidelines for code compilation, installation of application, hardware and software requirements, platform description and configuration, application configuring, and disaster recovery procedures). |
| DOC 007 | M | The Developer shall prepare and deliver <i>the</i> IT System Technical Design (SRS+SDD) on which basis all IT System development/ acceptance activities will be carried out. |
| DOC 008 | M | The Developer shall prepare and deliver the System Architecture Documentation with the description of models in UML language, to include a sufficient level of details in terms of Architecture in several cross-sections (including the data logical and physical model). |
| DOC 009 | M | The Developer shall prepare and deliver API documentation exposed to be integrated with other IT Systems. |
| DOC 010 | M | The Developer shall deliver all electronic mediums necessary to describe and validate the interfaces in WSDL language. |
| DOC 011 | M | The Developer shall deliver the source code for applications and components developed under the Project. |

5.2.5 Maintenance Requirements of the CEC Official Website

The Offeror shall ensure post-delivery defect liability period and technical support comprising the sections included in Table 5.30.

Table 5.30. Defect liability period and technical support provided to the CEC Official Website.

| Identifier | Binding level | Description of the defect liability period and technical support |
|------------|---------------|---|
| GMS 001 | M | <i>The Developer</i> shall cover the defect liability period and provide technical support for 12 months following the acceptance of the IT system. |
| GMS 002 | M | The defect liability period and technical support shall comply with the National Standard SM ISO/CEI 14764:2015 – Software Engineering. Software life-cycle processes. Maintenance. |
| GMS 003 | M | <i>The Developer</i> shall provide the Beneficiary with a Help Desk service available in all business days throughout the year. |
| GMS 004 | M | <i>The Beneficiary</i> will be able to call the Help Desk service at a national phone number (matching the numbering of contact phones in the Republic of Moldova). |
| GMS 005 | M | The communication language of Help Desk service is Romanian. |
| GMS 006 | M | <i>The Beneficiary</i> shall be able to report all technical issues that could occur through a ticketing mechanism, E-mail or instant message. |
| GMS 007 | M | <i>The Developer</i> shall ensure support to document the technical issues and their traceability for the Beneficiary. |
| GMS 008 | M | The deadline for response and remedying the reported issues should |

| Identifier | Binding level | Description of the defect liability period and technical support |
|------------|---------------|---|
| | | be at most eight working hours following the time of their reporting. |
| GMS 009 | M | For major complexity issues the remediation period shall not exceed 72 hours. |
| GMS 010 | M | <i>The Developer</i> shall prove its ability to provide post-delivery technical support in compliance with the requirements of GMS 001-GMS 009. |
| GMS 010 | M | Any programme error detected during the defect liability period shall be remedied by the Developed free-of-charge and in a timely manner. |
| GMS 010 | M | Should any additional implementation requests emerge related to the CEC Website, these requests would be the object of a contract amendment and payment for the provided services. |
| GMS 011 | M | <i>The Developer and the Beneficiary</i> shall sign a <i>SLA</i> that specifies in details the principles for providing the maintenance and support services, as well as the ones covered by the defect liability period. |

6. Final Product/Output and Delivered Components

The final output (the CEC Official Website) is composed of software artefacts and system documentation, as well as of knowledge transfer to the system Owner and Administrator. Artefacts related to the CEC Official Website deliverables are displayed in Table 6.1.

Table 6.1. Artefacts delivered for the CEC Official Website.

| Identifier | Binding level | Artefact Brief Description |
|------------|---------------|---|
| DELIV 001 | M | Complete source code of modules and components necessary to compile the delivered software. |
| DELIV 002 | M | Relevant information migrated from the current database of the CEC Website to the new version of the CEC Website. |
| DELIV 003 | M | Final product packed for easy installation in the proposed technological environment. |
| DELIV 004 | M | Technical design (SRS+SDD). |
| DELIV 005 | M | Document on system configuration and deployment. |
| DELIV 006 | M | User's Manual (Content Administrator). |
| DELIV 007 | M | Administrator's Manual (including the Contingency Plan). |
| DELIV 008 | M | Training materials intended to train the users of the CEC Official Website. |
| DELIV 009 | M | Technical specifications for the published interfaces of the CEC Official Website. |
| DELIV 010 | M | Test plan and the results of internal (functional, performance, security) testing. |
| DELIV 011 | M | SLA signed with CEC for the defect liability, maintenance and support period. |
| DELIV 012 | M | All artefacts copied on electronic medium (DVD+-R). |

In addition to the artefacts related to the CEC Official Website deliverables, all the services needed for knowledge transfer indicated in Table 6.2. will be provided.

Table 6.2. Knowledge transfer services related to delivered artefacts.

| Identifier | Binding level | Artefact Brief Description |
|------------|---------------|---|
| DELIV 013 | M | Training of Users and Administrators. |
| DELIV 014 | M | Assistance during the system pilot implementation period. |
| DELIV 015 | M | Assistance in testing the system acceptance. |
| DELIV 016 | M | Assistance in putting the system into production. |
| DELIV 017 | M | Solving the deficiencies identified during the pilot period and acceptance testing. |
| DELIV 018 | M | Post-implementation technical support (after the system bringing into the production) for a 12-month period, including corrective, adaptive and preventive maintenance, in compliance with ISO/IEC 14764. |

7. Implementation Stages of the CEC Official Website

The designing, building, testing and implementation of a new version of the CEC Official Website must be done by the specialised enterprises and institutions holding the required licences and work experience to carry out the corresponding works in accordance with the following stages:

1. **IT System development stage**, which shall be subdivided into phases coordinated with the involved parties in the upgrade of the CEC Official Website as follows:
 - a. *The Developer*, based on the tender Scope of Work and discussions held directly with the *Beneficiary*, shall determine and analyse the requirements, design the structure of the IT system and create the **Technical Project** in one month **at most** (this is a *document that will contain detailed information on the IT solution architecture, the conceptual and physical model of data, all components of the IT system and the interaction among them, the hardware and software resources necessary for operation, principle for developing the administrator and User Interface, peculiarities of the implemented legislative provisions/rules, the users and their roles, all types of standard documents implemented, principles for ensuring the information security*);
 - b. *The Developer* shall devise the graphical design of the CEC Official Website. *The Developer* shall propose 2-3 design versions, from which the working version will be picked up and developed the final design. The duration of graphical design development until its final approval shall not exceed three weeks;
 - c. *The Developer* shall devise the IT system code programme, integrate the graphical design and its modules into a prototype version of the IT system (it will be presented to the parties, demonstrating the availability of all functionalities required in the Terms of Reference and documented in the **Technical Project**). This stage shall not exceed three months.
 - d. *The Developer* proceeds with testing the system in laboratory mode (in-house testing), performs stress and load testing and prepares the accompanying documentation (presented shall be the functionalities of the system complete with corrections and adjustments made during the previous sub-stage; also presented shall be a set of technical documentation, etc.). The stage shall last one month.
 - e. The Developer shall ensure migration of relevant information stored in the current version of the CEC Website *into* the developed IT solution (the duration of data migration shall not exceed one month).
2. **The System Implementation Stage** will begin with the approval of the Protocol of acceptance by the owner of the IT system in the submitted version and the signing of the statement of acceptance in pilot operation. At this stage the Developer shall test the system in the condition of pilot operation, detecting and remedying the performance errors, issues, etc. At this stage the Developer shall prepare the final version of the IT system to be put into operation.
3. **The training stage** shall start concomitantly with the implementation of the IT solution and cover the training of two system users from all subdivisions that would place or furnish information on the CEC Official Website and two System Administrators of the *Division IT and Management of Voters' Lists*.
4. **The system commissioning** begins with the signing of the IT System Commissioning Statement and starting of its operation.
5. **The CEC Official Website maintenance stage** is the period during which the system Developer is assuming the obligation relative to the Beneficiary to grant assistance in maintaining the capacity of the IT system to provide services as well as in changing the software, while maintaining its integrity. The duration of the defect liability period and maintenance shall last 12 months.

8. Requirements for preparing the offers

8.1. Requirements for the Offerors' institutional power

Moldovan resident companies (or those that have branches on the territory of the Republic of Moldova) specialised in providing IT services with a five-year work experience may take part in the competition. It is preferable that the Offerors have experience in developing and implementing WEB solutions intended for central and local public authorities.

The interested legal persons shall send their technical and financial proposals containing:

- a detailed description of the enterprise (experience, human resources, field-related managerial and technical capacities, etc.);
- copies of registration documents;
- a certificate confirming it has no debts to the budget;
- the enterprise Portfolio containing similar projects implemented by it;
- references of the enterprise beneficiaries for the last four years;
- key staff resumes involved in the project;
- brief description of similar IT solutions;
- the proposed detailed technical offer, including the constraints of hardware functioning, estimation of activities and their duration.
- defect liability period and technical support;
- the detailed financial offer;
- other relevant documents.

8.2. Requirements for the Offeror Staff Qualification

All the discussions with the project Beneficiaries will be held in Romanian. All the related documentation, trainings and technical support will be provided/conducted in Romanian. All employees involved in the project who interact directly with the Beneficiary shall be fluent in Romanian.

The Offeror shall include in the submitted technical offer summary data on the staff involved in the project and their qualifications. The engagement of qualified staff having work experience in developing and implementing IT systems for the Moldovan central public authorities is welcome. It is required to explicitly describe the qualification of people employed in the following key functions:

- Project Manager;
- Technical Coordinator;
- Designer;
- Systems Analyst;

It is required to submit the resumes of people engaged in these positions, keeping in mind that the team members' work experience meets the requirements set below:

1. Minimum Requirements for a Project Manager:

- Licensed in ICT;
- At least five years of work experience in managing IT projects;
- Specific work experience as an ICT Project Manager proved through the implementation of similar projects comprising technical analysis activities, formalizing the design requirements and developing software solutions;
- Knowledge of modern means of project management;
- Fluency in Romanian and English;
- Recognised certifications held in the area of project management would be an advantage.

2. Minimum Requirements for a Technical Coordinator:

- Licensed in ICT;
- At least five years of work experience in developing IT systems;
- Specific work experience as a Technical Coordinator in ICT projects proved by the work in similar positions, being involved in developing IT solutions similar to CEC official WEB page or of higher complexity;
- Advanced knowledge of modern information technologies, information security standards and methodologies;
- Knowledge of International methodologies for KPI monitoring and forecasting;
- Sufficient knowledge of the methodology for developing IT solutions intended for the governmental sector of the Republic of Moldova;
- Fluency in Romanian;
- Recognised certifications held in the area of technologies proposed in the technical offer would be an advantage.

3. Minimum Requirements for a Designer:

- At least three years of work experience in developing WEB interfaces;
- Specific work experience as a Designer in ICT projects proved by the work in similar positions, being involved in developing IT solutions similar to CEC official WEB page;
- Demonstrating at least five WEB projects in progress where the developed design was implemented;
- Knowledge of methodologies and of modern trends for designing and developing IT solutions based on WEB interfaces;
- Sufficient knowledge of the methodology for developing IT solutions intended for the governmental sector of the Republic of Moldova;
- Fluency in Romanian.

4. Minimum Requirements for a Systems Analyst:

- Licensed in ICT;
- At least three years of work experience in IT System analysis and development;
- Specific work experience as a Systems Analyst in ICT projects proved by the work in similar positions, being involved in developing IT solutions similar to CEC official WEB page or of higher complexity;
- Knowledge of modern methodologies for designing and developing IT solutions;
- Sufficient knowledge of the methodology for developing IT solutions intended for the governmental sector of the Republic of Moldova;
- Fluency in Romanian.