

## **ANNEX A. Conceptual, functional and technical requirements for web platform UNDP Moldova Interactive GIS Map of all projects and field interventions.**

### **1. The scope of required works.**

The main goal of required works is elaboration of design and development of the GIS based interactive maps web platform for visualization the field intervention of UNDP and as well as integration of a content management system for the platform management.

The public URL/address of the platform will be determined by the future project owners, the allocation of the hosting of the web platform will be managed by the beneficiary and will be coordinated with the executor.

### **2. Requirements to platform structure and navigation.**

#### **2.1 General conditions for site structure:**

**2.1.1** The web platform will be an informational resource of many levels that will contain 3 interface languages (English, Romanian and Russian) with the possibility to publish content (text data, statistical data, images and other elements) information and in other additional languages.

**2.1.2** The structure of web platform will be divided in two zones:

- The public zone – available to be accessed using http protocol by human users using a web browser, or by search engine bots, crawlers and other programs capable to load web pages with no additional requirements to be implemented by the platform owners.
- The administrative zone – available to be accessed using http protocol by human users via web browsers, with restricted access (access only for persons determined by project owners who are empowered with content and system management rights). The administrative zone has to filter and limit access of the search engines and other non-human users by commonly used techniques like: user and password-based login, password protecting the directory, specifically configured robots.txt files, filtering by the user agent, blocking and filtering by IP (as optional measure).

**2.1.3** The web platform administrative zone must allow frequent updating of the content available on the public zone by the staff of the project's beneficiary, who don't have professional background in design or and programming, but will be trained to publish and maintain the content on the platform. The effort of content managing (publishing, editing, deleting) for the web platform should be at an intermediate level, similar to the one necessary to operate with office documents and requiring general skills of computer operation (knowing how to operate with email, PC/Mac desktop programs, knowing the general aspects of web sites content publication).

#### **2.2 Web platform structure**

##### **2.2.1 Public zone – text representation**

The definite structure of web platform public zone will be agreed with project beneficiaries while works execution. Prior structure contains the following major sections.

- Main page
- About the platform
- Field interventions (The GIS Map compartment)
- Predefined filters (final page name will be determined in the process of project development)
- SDGs in action (final page name will be determined in the process of project development)
- Donors
- Contacts and feedback
  - General contacts information
  - Specialists contacts
  - Feedback form

##### **2.3 Navigation requirements**

**2.3.1** The site navigation system should include following major navigation elements

**The menu with generic platform navigation elements**

- Main page

- About the platform
- Contacts
- Sitemap
- Language switcher
- Links to other pages determined in the process of project development

The Generic menu will be implemented separately from other navigation requirement, having visually distinguished a style in order not to look like other web platform menus and navigation elements.

#### **The main menu containing Fields intervention navigation**

- Moldova Map of interventions
- Top of interventions
- SDGs in action (final page name will later be determined)
- Donors

#### **Footer navigation**

- About the platform
- Contacts
- Field interventions
- Predefined filters (final page name will later be determined)
- SDGs in action (final page name will later be determined)
- External links to main social media profiles (Facebook, Twitter, Instagram, LinkedIn, Youtube, medium, Odnoklassniki)
- Copyright and terms of use
- Privacy policy

**The breadcrumb trail location bar** – a optional navigational element which has the role of informing visitors about the location of the visitor on the platform in relation with the platform's hierarchy. The location bar will include references at superior levels that will be automatically generated with corresponding link from hierarchy passed by user. This bar represents a group of elements separated by the symbols „/” or „>”, space symbol, for example Main page '>'Fields investigations '>' Top of Interventions '>' Villages top.

All elements of the string must contain references to the respective web platform compartments beside the last element. The bar of indicating elements have to be placed in the left upper part of the page, directly after menu bar.

### **2.3.2 Other navigation requirements**

- Passing to the first page will be ensured by clicking on the official symbols of web platform.
- URL addresses of the web platform pages must be simple and intuitive, informative, and logically structured, for example <https://webplatform.md/mapofinterventions/glodeni/hijdiene> It is evident that on the respective address is placed a compartment Moldova Map of interventions/ Glodeni district/ Hîjdieni village.
- Navigation elements should be accessible from each web page.
- The navigation look has to be designed and have to interact with the visitors so they could easily understand where they have come from, where they are currently, and where they can go from their current location.
- The navigation elements have to be distinct, visually separated and easy to find, it has to stand out and have enough contrast in comparison to body text and pages content.
- The navigation elements have to respect high accessibility requirements being based on the CSS standards and be:
  - Accessible in all major browsers
  - Mobile friendly and supported by mobile devices
  - Work with disabled Javascript
  - Work without mouse (see details here <https://terrellthompson.com/202> )
  - Available for users with difficulty reading text (see details here <https://www.joedolson.com/2013/07/designing-accessible-navigation/> )

- The main menu has to be top of the page sticky and should not disappear when the user scrolls down the page.

### 3. Requirements to searching system

Besides classic navigating system, there will be implemented 3 instruments of content and data identification for the users on web platform.

#### 3.1 Simple searching tool

It will represent a searching field that will be available on all pages of the site allowing user to insert key words and start searching. The content management system will search throughout the materials and display the results on a page.

#### 3.2 Advanced overall platform searching

It will be present on the page with searching results as an additional option. In this section, visitors will have additional elements for performing a more exact search, such as:

- Searching field with the help of key word
- Elements of rubrics selection where is made searching process
- Activation of searching based on parameters that are available in different types of categories/ pages, these being different depending on the searching compartment

#### 3.3 Moldova Map of interventions GIS page search

One of the core compartments of the platform is the page containing the GIS map of interventions, the page will contain several groups of filters for identification of the localities from Moldova which benefited from support by UNDP projects. Besides the filtering module (that will be described later in this document) the compartment will have to include a GIS Map related search system that will be capable to identify:

- The location of a village, city, district/region on the map when search is performed by location name
- The localities where interventions occurred by project name
- The localities by other user-based search input key (final page name will be determined in the process of project development)

### 4. Requirements to web page content

#### 4.1 Types of content pages

The web platform pages may be divided in dependence of their predestination in the following types:

**Main page** – represents the main entry for the users whilst accessing the web platform, the web page will display dynamically updated blocks (based on the cumulated platform data), static content blocks that will remain unchanged for permanent or suffer minor changes in time, will display dynamically updated statistical information and indicators automatically counting data and visualizing in a pleasant “infographical style”, other blocks and elements determined in the process of project development.

**Web platform main GIS Map page** – the most complex dynamic page of the web platform that will include the interactive map of Moldova capable to identify and visualize specific regions from Moldova, depending on the applied filters, and other user input parameters available in this page, also capable to display informational blocks related to specific the user inputs.

**Non-map-based categories** – represent compartments where the content is automatically extracted from dynamic pages, being grouped by parameters in blocks respecting specific orders (e.g.: date of publication, or other that will be determined in the project development process) containing introductive content elements (e.g. title, page main image, short intro, publication date, etc.) and linking to specific dynamic pages.

**Internal map based dynamic page** – represents a specific website dynamic page that embeds as the main element a GIS map with visualizing a specific village, district/region, or entire country level map merged with additional data and other content elements which are loaded dynamically from the

database, being updated automatically if the content or data is modified from the administrative compartment.

**Internal non-map dynamic page** – represents all site's pages where the embedded content is published with constant periodicity, the page will not focus on visualizing the content as a map, it may contain text blocks, images, data blocks, tables.

**Static internal page** – represents site's pages that are placed once with its launch, but with the time it is supposed to have minor content modification or remains intact all the time (for example: About platform, Contacts, Copyright and terms of use, Privacy policy etc.).

## 4.2 Web platform main page elements

**Top header of the page will contain:**

- a) Project branding (left corner) / logo, name
- b) Generic platform navigation
- c) The main menu containing Fields intervention navigation

**Body section will contain** (the specific order and layout of the elements will be proposed and approved at the stage of design in the process of the project development):

- a) A brief platform description containing a link to the full presentation page
- b) A call to action block engaging the user to explore the Web platform main GIS Map page – it is recommended for the block to contain at least 3 interactive elements letting the users “to land” to the GIS Map page already containing results with the specified filtering parameters.
- c) Intervention tops block – displaying short information to most representative interventions, projects, localities, donors or other important tops determined during the process development together with the project's representatives.
- d) Statistical infographics data visualization block – will automatically extract from the database of the interventions important statistical information visualized as thematic indicators as pictograms, active charts, mini-maps, interactive illustrations or other visual elements combined exact data. The displayed data will have to be automatically updated by the platform if changes will occur when adding/modifying intervention's information, with no special intervention by the content managers for being displayed on the main page.
- e) SDGs in action block – will automatically display the lists of SDGs combined with brief statistical data, dynamically updated, divided by categories according to the 17 Sustainable Development Goals (see the list here <https://sustainabledevelopment.un.org/>) including several automatically calculated indicators per SDG like:
  - Number of localities
  - Overall budget
  - Number of projects
  - Percentage of the total budget
  - Impact on population
  - other data determined in the process of project development
  - link/button to all SDGs in action page
  - link to the SDGs in action static page dedicated to each specific SDGand also displaying static information like:
  - SDG name
  - SDG icon
  - SDG color
- f) Focus area short data block – will automatically display the list of focus area of the interventions and statistical data in relation to the interventions like:
  - The name of the focus area
  - Number of localities contributed to
  - Number of interventions
  - Overall budget
  - Percentage of the total budget
  - Impact on population

- other data determined in the process of project development
- g) Top donors block – the dynamic short list of the top donor organizations contributing to field interventions containing statically information automatically calculated data based on the inputs in the system like:
- Donor name
  - Total budget
  - Number of localities contributed to
  - Number of projects contributed to, divided by project level: national, regional, local
  - Year of starting contributions
  - SDGs contributed to
  - Links to the all donors page
  - Link to the donor's profile page
- h) Recent interventions block – the listed last 5-10 interventions containing short information listed chronologically starting with the newest:
- Intervention name
  - Intervention budget
  - Impact on population
  - Implementation timeframe
  - Intervention level: national, regional, local
  - Focus areas
  - SDGs contributed to
  - other data determined in the process of project development
- i) Other main page elements – the page could contain some additional blocks and page elements with low to medium complexity and automatization like images, internal & external links, text blocks and other – the final list of elements will be determined in the process of project development.

**Footer section:**

- a) Footer navigation
- b) Copyright notice
- c) Made by notice

#### **4.3 Platform main GIS interactive Map page**

Being the most important compartment of the website, the main focus of the platform has to be oriented to delivering best interactive experience operating with this page.

**The interventions filtering module** will offer the possibility to identify and display locations by one or more parameters like:

- a) Year or years of intervention
- b) SDGs referring to (17 options)
- c) Intervention
- d) Project
- e) Focus area (with up to 20 options)
- f) Level: national, regional, local
- g) Locality
- h) Status: ongoing, completed
- i) Donor
- j) Budget: USD
- k) Timeframe
- l) Objectives
- m) Results
- n) Beneficiaries

**The map displaying module**

- a) Will focus on showing the level of Republic of Moldova on map with no necessity to zoom out on regional, continental or global level
- b) The base map layer may be used from public GIS Services, as recommending not implementing it on the commercial provided services

- c) The shapes and the coordinates of Moldovan localities will be provided by project beneficiaries in GEOJSON, KML formats or another GIS compatible format
- d) The full list of localities and district will be provided by the project beneficiaries
- e) The map displaying module may show the shapes of Moldovan localities with no need for loading additional base maps from third party services
- f) The interactive map module will support zooming in and zooming out option

**Data based visualization types** – considering the fact that the interactive map will have behind hundreds or maybe thousands of data collected, it is important to be able to visualize the maps as

- a) Simple shape maps – displaying data as overlays
- b) Color Category based maps – displaying categories of information on the map or in specifically dedicated blocks
- c) Interactive choropleth maps – changing the color of the elements based on the data behind
- d) Bubble interactive maps – displaying bubble-based visualizations on the map based on the data behind

**Representing the information** – the main interaction on the interactive GIS Map module is going to be at a map level, yet the map block is one of the elements of the page, the detailed information on the interventions will be displayed in separate blocks containing most important data, with possibility to open the specific profile of:

- a) An intervention
- b) A location
- c) A domain
- d) A donor

The profiles will be separate pages or blocks containing data merged from different interventions grouped in dependency of the applied filters or selected options.

#### **Additional requirements**

- a) The embedding module will offer the possibility to save the state of a map and generate a html code form including the map in a third-party website
- b) Saving the map as image in PNG format functionality will be implemented
- c) Publishing on social media instruments will offer the possibility to generate a preview of a map at a certain state and share it as a link to social media networks
- d) The reports generation module will offer the possibility to specify parameters and filters that will be able to display the list of interventions in a list view model and not only as GIS maps

### **5. Mobile version support**

The platform will be developed on the principles of “responsive” web development assuring correct display on desktop and mobile devices with no need to maintain specific versions.

The mobile support will be focused on assuring compatibility with current major versions of Android and iOS systems in the main mobile browsers: Chrome, Safari, Firefox.

### **6. Web platform specific requirements**

#### **6.1 Website styling requirements**

The web platform styling has to be suitable with the visual style of UNDP and respect the requirements of the UNDP Brand Manual to be consistent and recognizable by the visitors.

##### **6.1.1 General styling requirements:**

- The web has to be recognizable by the visitors accessing any of the pages, the complex GIS map page, or even a static page.
- The website design template has to be created for a resolution starting with the HD format (1280 x 720) and has to be optimized at the design level to have a responsible layout compatible with various devices

##### **6.1.2 General pages layout requirements:**

a) Typography:

- The styling of the text element has to respect same styling on all web platform pages (e.g.: font type, font size, font colors, formatting, spacing, alignments, listings, links, titles, paragraphs, margins, quotes, styled code, font icons, etc.)
- The website text items have to be readable and used with clear purpose
- The unnecessary distracting visual effects have to be avoided (e.g. blinking, scrolling marquees, etc.)
- Sufficient contrast has to be implemented for the content fonts and background elements.

b) Arrangement style:

- The arrangement of the platform's elements has to look unitary
- The general visual style has to be followed on all the pages all through the elements of each individual page
- The web platform navigations have to be intuitive and easy to access.

## 6.2 Web design related requirements

### 6.2.1 General web design requirements:

- The web platform's interface of the site has to follow good practices, recommendations and techniques of web design specific to Web 2.0
- The website design has to be optimized for the fast loading not exceeding 8 seconds per page, additional programming techniques not referring to the design may be applied in order to rise the page loading speeds
- Using of decorative graphic elements have to be reduced, graphics mainly being acceptable for use for content integration, supporting key messages, displaying content elements

### 6.2.2 Web platform icons usage requirements

- a) Making use of simple non-cluttered icon styling and design, preferable flat, line based, up to 3 colors icons avoiding usage of 3d icons, shadow effects, gradient effects, other old styled icons
- b) To use reduced file size
- c) To respect icons positioning and sizing in different web platform pages
- d) To be easy recognizable and to be universally accepted by various users
- e) To use reduced file size
- f) To be integrated as fonts (if possible) or as vector SVG images in order to offer the re-sizing possibility without loose of quality and being able to load faster than the image-based icons.

### 6.2.3 Images using requirements

The web platform will display graphic elements using the following formats JPG (JPEG), PNG, GIF, SVG respecting the requirements:

- a) The integrated images will have the possibility of assigning the alternative text (ALT tag), the used alternative texts will be no bigger than 100 characters and the tags will follow these recommendations <https://medium.com/@Velir/5-common-mistakes-people-make-when-using-alt-tags-and-how-to-avoid-them-58246594f78e>
- b) The graphic elements and background colors must be included as encoded css styles not as image files
- c) The content images bigger than 1024 kb will be automatically resized by the platform at the visual level of the images multiplied by 2 in order to deliver retina ready image quality, it is forbidden to display images having visual size more than 2 times lower than the physical size of the image (e.g.: displaying of the image project.jpg at the size of 400x300 pixels when the file has a 4000 x 3000 pixels resolution and a weight of 4 MB).

### 6.2.4 Animations requirements

- a) The web platform may use interface animations implemented by use of HTML 5 practices combining CSS programming and java script, these elements being used for helping the users interact with the website, to have a pleasant using experience and to offer a modern look and feel with respect to modern technologies
- b) The content animations can be implemented as programmed HTML 5 code, as animated GIF images, vector SVG animated graphics or web optimized videos

- c) Using of flash-based technologies animations is forbidden.

#### **6.2.5 Tables requirements**

- a) The recommended table size has to be implemented as relative and not fixed
- b) The table header has to be visually styled differently in relation to table contents
- c) The recommended cell border/table border – 1 Px, solid.

#### **a) Color schemes as design elements**

- b) The defined color scheme will be the same on the all of the pages of the platform
- c) The selected colors for navigation, interface and content have to assure sufficient contrast, yet not creating discomfort for the general users having a “extremely high contrast color scheme”
- d) The active interface elements (e.g.: links, buttons, navigation, etc.) have to be displayed in different colors than the content elements colors
- e) Displaying of the colors within the web platform code have to be specified in hex format.

#### **6.2.6 Web platform templates requirements**

The website will be templates based developed, editable as source code available as separate files for the following types:

- a) Main page
- b) General content category page
- c) General content dynamic page
- d) Static page
- e) GIS Map main page
- f) GIS Map article pages
- g) SDGs category page
- h) SDGs article page
- a) Other pages templates identified in the process of project development

#### **6.3 Links related requirements**

The web platform pages have to interact in a correct way, this may be achieved by correct links implementation, and may follow the next recommendations.

##### **General links related requirements:**

- b) The links texts should directly relate to the title of the page and have to be short and brief being composed by main keywords of the page title
- c) To be easily readable for human visitors
- d) The links to the inner web platform pages have to be opened in same window, using of the target \_blank parameter being unrecommended for inner pages, as exceptions the links to non-html pages that may open with embedded programs and modules, or desktop programs may be opened in new windows (e.g.: DOC, XZLS, TXT, PDF, PPT files)
- e) When implementing the link structure using of special characters (percentage, \$, ! and other symbols) have to be avoided as they may be interpreted by search engine crawlers as SPAM links or by the browsers and antiviruses as links to virused pages or malicious websites
- f) The text links have to be highlighted as according to common practices of web design, meaning the text containing links have to look different than simple content, act with reaction to the user interaction (e.g.: hover effect, underline styling, etc.)
- g) As much as it is possible to be avoided use of Java Scripts for the web platform or external links
- h) The links to external resources has to be opened in a new window by implementing the target \_blank link parameter.

#### **6.4 Web platform fonts requirements**

The text-based web platform content has to be designed and integrated with maximal effort on assuring to the user the easiness of information understanding from the platform.



In case of requirements of showcasing specific information there are acceptable the following formatting of the text blocks:

- a) CAPS lock and italic texts – will be possible to be used, yet not as a common
- b) Bold style – is acceptable for the titles, table headers, blocks heads, within regular texts in order to highlight key messages
- c) Underlined styling – will be used for links.

#### **6.4.1 Fonts colors:**

- a) The platform has to deliver an optimal fonts contrast level having high visibility and readability when combined with other content elements
- b) The titles of the page have to stand out and be more visible than the regular content
- c) For different web platform pages there has to be used consistent fonts stylings for various text types (title, regular texts, links).

#### **6.4.2 Font families requirements:**

The web platform will use up to 2 font families that will correspond or will not highly conflict as visual style with the branding and design requirements specified in the visual identity documents. The selected font families have to be able to display with no errors and missing letters the Romanian, English and Russian languages, recommendable to be free, non-commercial fonts.

#### **6.4.3 Font size requirements:**

- a) The web platform may use relative and fixed font size.
- b) The default content font size has to have sufficient size for being readable, following the common web development practices it may vary from 12 to 14 pt.

### **6.5 Formats application requirements**

The numbers and date formats implemented in the platform have to work and display properly with no errors independently of the visitor's local settings and location.

**6.5.1 Date format** have to follow the model “dd.mm.yyyy”, where dd – day, mm – month, yyyy – year; and using the dot as separator, as alternative it is admitted to use the “dd month yyyy” format that will display as “14 june 2019”.

#### **6.5.2 Platform data keeping formats:**

- a) Text objects storing and displaying formats: HTML, PDF, RTF
- b) Tables storing formats: XML, CSV, XLS
- c) Graphic objects formats: GIF, JPG (JPEG), PNG, SVG
- d) Archives formats: ZIP
- e) Attachment files formats that are typical office documents formats: DOC, DOCX, XLS, XLSX, PPT, PDF
- f) For videos embedding the video files will be converted to web optimized video formats or will be embedded from media hosting platforms (e.g.:youtube, vimeo, etc.)

### **6.6 Web browsers compatibility requirements**

The platform's pages have to be displayed correctly when using modern current versions of the major browsers, compatibility with the following versions have to be delivered:

#### **6.6.1 Desktop browsers:**

- a) Mozilla Firefox (version 69 and newer)
- b) MS Internet Explorer (version 11)
- c) Chrome (77 and newer)
- d) Safari (12 and newer)
- e) Microsoft Edge (44 and newer)

#### **6.6.2 Desktop browsers:**

- a) Mozilla Firefox (version 19 and newer)
- b) Chrome android (77 and newer)
- c) Chrome iOS (77 and newer)
- d) Safari mobile (iOS 12 and newer)

## 6.7 Respecting common web standards

- a) For assuring the correct display using current web browsers in most of the modern operating systems the platform has to follow the recommendations W3C (World Wide Web Consortium see [www.w3c.org](http://www.w3c.org))
- b) Assuring the accessibility for visitors having disabilities, the platform have to follow the WAI requirements (Web Accessibility Initiative, see [www.w3.org/WAI/](http://www.w3.org/WAI/) )
- c) The platform has to be tested and assure high conformation with the W3C validator instruments (see <http://validator.w3.org/> )
- d) The platform have to follow the Semantic Web best practices and principles (see <https://www.w3.org/standards/semanticweb/> )

## 6.8 Search engines optimization

In the process of project development and at the public launching sstage the platform developers have to implement a “white” search engine optimization measures, and implement at least the following recommendations:

- a) The administration system will offer the will embed in the editing sections the meta data adding and editing tags (description, keywords, page title, authors, etc.)
- b) For the pages that do not have individually setted meta data the system will automatically generate universal platform specific meta information, the settings being managed from a specifically developed administrative section
- c) The platform will be capable to generate intuitive human friendly page URLS (e.g.: <http://platformlink.md/gismap/straseni> and not <http://platformurl.md/section32/id412.php>)
- d) Imediately after the launch on the production server the developer will register the web platform in the major search engines – Google, Bing, Yandex, using the proppwer webmasters tools, the web platform specific credentials will be created and transmited at the project delivery stage.
- e) The sitemap.xml automatic generation will be implemented, being optimized for the search engine crawlers and used when registering the platform on the major search engines
- f) When developing the platform there will be used coding best practices optimized for the search engines, like:
  - Div-based coding instead of using of tables
  - Using of CSS files for styling instead of in-line styling
  - Using the texts as fonts and not as images
  - Other recommendations issued and documented by the major search engines

## 6.9 Social media optimization

Considering social media as the major model channel of communication, the platform developers will perform several optimization techniques in order to rise the quality of content displaying and crawling the content from the platform by the social media crawlers.

- a) Integration of the relevant social media modules that stimulate users engagement in the web pages, these implementation will be non aggressive, and not being distractive and intrusive for platform’s content perception.
- b) Integration of open graph tags manually implemented for generic platform pages, with the possibility to edit and update the tags.
- c) Automatic generation of the open graph tags for the content pages with no effort from the platform administrators:
  - Page title
  - Page short description
  - Page thumbnail base on the article’s page or generic platforms’ thumbnail if no article image available
  - Page link
- d) Like and share buttons in the content pages
- e) Navigation section to official social media profiles.

## 7.

### 7.1 Web platform structure management requirements

The structure management module has to provide the following functionalities:

- a) Editing and management of the navigation elements
- b) Management of the website sections and content
- c) Management of the main GIS map module
- d) Publishing of an unlimited number of pages
- e) Possibility to publish and unpublish (no deletion) of the pages if necessary
- f) Using of specific pages templates for the various platform compartments and sections

### 7.2 Content management administrative module requirements

- a) The platform will be developed on a custom created content management or using one of the few major content management systems
- b) The project has to be developed using open source CMS or Frameworks, which will not require further licensing
- f) It is acceptable to use commercial modules, plugins or instruments that are compatible with the required open source content management systems, with the corresponding argumentation of use and providing of a clear pricing model for not less than 5 years
- g) The licenses for the commercial elements will be registered on the beneficiary
- h) When proposing the content management system, the developers will provide major arguments for the selected system
- i) If a public open source content management system will be used, it is mandatory to use the last available public version, and if newer version will be released in the process of development, the developing team will perform proper system updates.

### 7.3 Content managing requirements

The content management module has to offer a commonly recognizable user interface specific to the major text editing software and assure the following possibilities:

- a) Typing/ inserting/ editing/ deleting by the users having proper rights of the text, graphic and GIS data
- b) Management of the meta data
- c) Selecting and assigning of the page template model
- d) Visual composing of informational elements>
  - Cutting elements to clipboard
  - Copy elements to clipboard
  - Pasting from clipboard
  - Link insertion
  - Link removal
  - Alignment operation
  - Insertion and removal of tables
  - Font styling operations
- e) Editing of the page's source code (html editing mode)
- f) Adding and removal of images
- g) Adding and removal of attachments for download
- h) Inserting embedded video and audio files from media hosting platforms
- i) Editing of the content in a WYSIWYG editor by regular users and availability to edit the source code by advanced user.

### 7.4 Informational elements management

The administrative system will support the following informational elements and will provide necessary tools for editing them:

**7.4.1 General content page** will contain several text and graphic elements. The editing module will provide following operations:

- a) Creation and removal of pages and page content elements
- b) Visual editing of the page's content elements
- c) Page source code editing
- d) Publishing of the page on the platform
- e) Editing of the page specific meta data

**7.4.2 External media files** represented by video, audio, ppt, images and other digital content hosted on the third-party platforms (e.g.: youtube, vimeo, soundcloud, dropbox, slideshare, etc.) that

provide embedding codes and provide the possibility to display the content in specific embedded players. The content management system will include fields or modules for insertion of the embedding codes.

### **7.5 Multi language management requirements**

The multi-language supporting module will provide the possibility to:

- a) Display the website interface in Romanian, English and Russian language and make available the possibility of integration of other languages
- b) Publishing and editing the content in other languages with no support of overall platform interface (e.g.: if the content manager is willing to add a text written with ebraic alphabet – the platform has to be capable to display the text correctly)
- c) The administrative section of the website will be mainly implemented in English language, support of the additional languages for the administrative section is not mandatory.

### **7.6 User rights management requirements**

The administrative system will offer the instruments for users management (adding, editing, removal, disabling) and user groups management. The access to the administrative system will be browser based and assured by at least user and password credentials data.

The minimal list of the user groups and rights:

**Administrators group**, having the following possibilities:

- a) Modification of the platform sections
- b) Editing of the templates and visual styles
- c) Modification of the published content
- d) Management of the users & user groups, specification of the rights
- e) Accessing of the logs
- f) Performing the backing up and restoring procedures
- g) Performing other general technical operations

#### **Editor & publisher**

- a) The right of adding, modification and deleting content on the platform
- b) Updating of the already existing content published by other users
- c) Publishing the content on the dynamic pages of the website
- d) Approves and publishes interventions uploaded by GIS Map contributions for the GIS Map compartment of the platform
- e) Archiving the old and unactual content
- f) Moderates (approves or deletes) comments on the platform (if implemented)

#### **GIS Map contributor**

- a) The right of adding, modification and deleting interventions for the publication in the GIS Map compartment
- b) Is able to operate only with the entries added by itself without possibility to modify the projects added by other platform users
- c) Is not able to publish the content directly on the website, the added content being necessary to be approved to publishing by the Editor & publisher users

#### **General visitor**

1. Has the rights to access public information on the platform
2. Does not require authentication for accessing the public content
3. As the possibility to post comments on the pages allowing this functionality

### **7.7 Other requirements**

The administrative system has to offer the possibility:

- a) Manage the platform content simultaneously by multiple users without conflicts

- b) To perform backup and storing of the system parameters and content
- c) Perform restoring of the system and the content from the backup archives.

## **8. Technical requirements**

### **8.1 Server-side requirements**

The platform launch will be performed based on the socialized hosting services that will be acquired by the beneficiary following the recommendations of the development team respecting the references:

- a) It is acceptable to launch the project on the specialized services offered by commercial companies specialized in providing hosting services (web/cloud/virtual, etc.)
- b) The platform run more acceptable on linux/unix based operating systems not requiring license acquisition.
- c) Depending on the amount of data uploaded at the pre-launch stage and estimation of the future data, the developers will propose a proper server type – shared hosting, virtual server, cloud hosting.
- d) The web server level software the project is recommended to run-on well-known Apache or Nginx software.

### **8.2 Programming languages, databases, frameworks, libraries and other recommendations**

As the recommended programming languages, the main requirement is using of open source-based solution and follow the options:

- a) Server-side web platform programming language – php, python
- b) Client site programming languages: html, java script, css, AJAX,
- c) Databases – MySql, MariaDb, MongoDB, PostgreSQL
- d) Libraries – jQuery, D3.js, Bootstrap, Node.js, wkhtmltoimage, Leaflet.js, Open layers
- e) GIS Mapping services – Open Street Map, Google Maps
- f) There are allowed other solutions, with proper argumentation