



Annex 1

Terms of Reference

UNDP/GEF Project: Moldova Sustainable Green Cities – Catalysing investment in sustainable green cities in the Republic of Moldova using a holistic integrated urban planning approach

Developing of the crowdsourced web-platform and mobile application eu.chisinau.md – 2 LOTS

Purpose

Provision of the services for the development of crowdsourced web-platform and mobile application eu.chisinau.md which will serve as a tool for the citizens reporting of problem issues in Chisinau Municipality

General requirements

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.

Duration

50 working days from the signing of the contract

Category of requirements

Detailed description of technical requirements

URL address

eu.chisinau.md

Requirements related to the graphic style

The graphic style and visual concept of the website and mobile app to be designed by the developer with graphic guidelines provided by the Chisinau City Hall and UNDP Moldova.

The website should have a mobile-responsive design to be accessible for non-app users from their mobile phones and smartphones.

Requirements related to the accessibility

The platform should correspond to the Web Content Accessibility Guidelines (WCAG 2.0) that assures web content is accessible and meets the needs of individual and the institution.

The website should be accessible for PC and Mobile users:

PC Users (desktop):

- with the range of colours of minimum 16 bytes;
- with the minimum resolution 1024 x 768;
- Using the PC platform, and as browser – the last versions of Google Chrome, Mozilla Firefox, Opera, Safari, Internet Explorer 11+, Microsoft Edge

Mobile users:

- Compatible with iOS, Android and Windows operating systems
- Screen resolution accessible for Smartphones and Tablets

Requirements for website design

The platform should have an responsive design. It should meet the following criteria:

- Efficient access to website content for users with different levels of IT skills;
- Predictable and intuitive presentation of the website structure and content. The website should have easy to navigate linear structure with limited hierarchies that allows to manage the personal cabinet, data visualization and other support features available on the platform.
- The design should be performance optimized to assure effortless and quick website navigation. The criteria to test web optimization is:
 - Easy to access user guide presenting the platform and its functionality;
 - Quick and user-friendly problem reporting procedure for the users;
 - Rapid search and filtering of the relevant information;
 - Intuitive management of the personal cabinet;
 - Real-time public data visualization and analytics.

The website and all its functionalities should be available in two languages – Romanian (Română) and Russian (Русский). The switch from one linguistic version to another to be possible by changing the linguistic version with the help of hypertext references.

Requirements regarding the software platform

The software should include two key features.

1. A crowdsourced problem reporting system (citizen to local authorities) that will allow citizen to report online the problems they encounter in their community and Chisinau municipality (illegal construction, vandalism, street lighting, waste management and sanitation, public transport, water and sewage.)
2. A citizen notification system (local authorities to citizen) that will allow Chisinau authorities to notify the platform users about non-emergency issues concerning Chisinau municipality.
 - Suppliers of services can offer the technology at his discretion, but it should be compatible with major PC and Mobile operating systems.
 - The software should support a backend administrator interface.
 - The software should include public data visualization tool for public use.

- The software should incorporate geolocation and geotagging features.
- The software should include an image management and storage capacity.
- The software should include a dashboard for the City Hall authorities to visualise the citizen request/reports/reports.

Security policy

- The website should reflect the OWASP Secure Coding Practices ([OWASP Guide](#)) to assure website protection and data security.
- Testing the site for the lack of security vulnerabilities (such as for eg. SQL Injection, Cross Site Scripting, etc.);

Privacy and cookie policy

- The privacy and cookie policy should be in accordance with national legislation on the management and protection of personal data.
- The website should clearly display the privacy and cookie policy to the platform users.

LOT2: Mobile applications

Mobile applications should support Android and IOS platforms.

Main features:

- provides streamlined issue reporting procedures from the field;
- provides exact issue location information;
- allows citizens to submit photos/videos of issue;

Notifications

Notification type	Triggered by event
Email	Report submitted
Email	Status of problem changed
Push notifications for mobile applications	Status of problem changed

Subjects and email body should be changeable in settings table of database.

Forms content

Web form for reporting (only registered/logged in citizen can report):

Field name	Field type	Notes
Problem category	Dropdown list	mandatory
Geolocation	Interactive map	Open-source maps, mandatory in case if Street information below is not provided
Street	Characters	mandatory in case if Geolocation information above is not provided
Upload picture/photo	Upload button	optional
Problem description	Multi-line text	Up to 300 characters, optional
Report publicly available	Checkbox	Default value is Checked

The form should contain non-editable city/country information from the settings.

Mobile application form for reporting (only registered/logged in citizen can report)

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User self-registration and login

The web platform should provide self-registration functionality for new users.

At the self-registration the following information is required:

- Name and Surname (optional)
- Email address (mandatory)
- Contact details – phone number (optional)
- The Chisinau zone/street where the person lives (optional)

Login form should contain CAPTCHA field. The email provided by user, during self-registration should be validated.

System settings

System settings should be configurable using backend administrator interface

- Notification email subject for all types of notifications
- Notification email body for all types of notifications
- City
- Country

Logging

The system should have logging part with the following functionality

Log type	Triggered by event
User login	On login of user
Admin login	On login of administrator
Problem reported	On save of problem report
Report status changed	On report status change
Email notification sent	On successful email sent
Push notification sent	On successful push notification sent

The log information should be accessible by Administrator from backend interface.

Database structure

Table Users / Utilizatori

Table Reports / Raportari: FK to Users, Report Status, Report Category

Table Institutions /Institutii: FK to Report Category

Table Institutions Administrators: FK to Report Category, Institutions

Table Report Status

Table Report Category

Table Report Logs FK to table Reports, Users, Institutions Administrators

Table Report Comments FK to table Reports (reserved for the future needs)

Users	Reports	Report Status	Report Comments
ID	ID	ID	ID
Name	Users, FK	Status	Comments
Surname	Category, FK		User, FK
Email address	Status, FK		Report, FK
Cobtact details	Geolocation		Timestamp
Chisinau zone	Street		
	Photo		
	Description		
	Public		
	Timestamp		

Report Logs	Report Category	Institutions	Institutions Administrators
ID	ID	ID	ID
User, FK	Category	Name	Name
Admin, FK		Dispecerat	Surname
Event		Category, FK	Email address
Report, FK		Institution Domain	Institutions, FK
Timestamp			Category, FK
			Valid

API

The system should provide REST API, only for reading.

Reports

The system should provide the following reports:

- All reports by regions
- Solved reports by region
- Non-solved reports by region

Format of reports should be:

- Web-based
- Excel
- PDF report for approval.

Business processes of the information system

The website information system should include three key roles/cabinet.

1. Administrator role

The administrator will have full access rights to the platform to manage the content on the website. The administrator should have a dashboard to see the citizen reports, status changes and responsible department managing the request/reports based on the predetermined categorization of issues.

2. Editor role

The editor role to be designed for the City Hall departments and Municipal Enterprises that will manage the citizen request/reports.

The editor should verify the validity of request/reports, determine whenever it has inappropriate content and choose to unpublish it from the public feed.

The editor will have the right to edit the status request/reports and solicit further information from the person who reported a problem based on its contact information.

The Editor should have access only to designated reports groups, other, non-designated, groups should be not accessible.

The editor should be able to print individual user-generated request/reports on the webpage in the PDF Format. The printed information should include Name of the user, Email address of the user, reported category, address, uploaded photo/image, and description.

3. Platform users

The platform users are the citizen that can report online the problems they encounter daily in their communities.

The platform should include user registration that will allow citizen to have a personal cabinet to manage and track the status of the reported issues.

The user authentication also serves the purpose to discourage anonymous or malicious reporting practices, as well as allow the local authorities to send relevant notifications to the platform users regarding the emergency and non-emergency issues.

Response and management of citizen request/reports

The issues reported on the platform can be done only by the registered users. The user-generated report should include:

- The category of issues which the user selects from a list of available categories. The categories include:
 - Illegal construction
 - Illegal economic activities
 - Sanitation and waste
 - Water and sewage
 - Street lighting
 - Roads and potholes
 - Public transport
 - Parks maintenance
 - Stray dogs
- The address where the issue was observed, preferably geolocated automatically through the user's device.
- Optional attached photo of the incident or identified problem.
- Optional description manually introduced by the user to provide further details on the report. The space to provide description should be limited to 300 characters with spaces.

The user can choose to make his request/reports public on the platform report feed. The publishing of request/reports should be validated by the administrator/editor with proper access rights. The user that reported a problem should be able to manage his request/reports in his cabinet where he can track its status.

Responding and managing the citizen request/reports will be one of the appointed City Hall department or Municipal Enterprise. Each institution will have their cabinet where they can

manage the citizen request/reports. Each institution will be assigned leading role over one of the reported categories. Because some reported issues will require multiple responsible institution a secondary category can be assigned. The cabinet should display category-specific request/reports, time and date of received request/reports (cannot be edited), responsible person (can be edited), status of the request/reports (can be edited).

Beside the cabinet, the institution responsible for managing the request/reports will receive an email notification when a new request/reports is formed.

Backend administrator interface

The content of the website will be administered through a backend administrator interface with a friendly interface in Romanian and Russian.

The backend administrator interface should have mechanisms for setting the principles for users' authorization, as well as their rights and roles. Hence, it should be possible to share the competences for administration of website's compartments among distinct users.

The backend administrator interface of the eu.chisinau.md website should provide the administrators with the possibility to:

- Administer the website structure
- Manage the user database that will includes contact information and link to their reports

Manage the reports files/dossiers

Requirements for user authentication

The users will have two possibilities of authentication:

1. MPASS authentication
2. Simple authentication or authentication through Facebook, Google accounts and other.

*Alternative authentication methods feasible for the platform are subject to discussion.

Requirements for searching information

The website should have a searching and sorting mechanism that will be an integral part of the data visualisation tool.

Requirements for ensuring the quality of delivered solution

The developed solution should be tested to evaluate functionality and usability of the platform's client and server side.

The test should also confirm the compatibility of the interface across different platforms (desktop and mobile) and devices (PC, smartphones, tablets). The developed website needs to be optimized for both desktop and mobile use.

Requirements for the eventual structure of the website

Rapid links

- The first page
 - Login/registration
 - Public feed of approved citizen reports
 - Map with pinned citizen reports
- Reporting page
 - Category of report from the drop-down menu (mandatory)

- Address input automatically geolocated on the map or manually pinned by user (mandatory)
- Photo upload (optional)
- Problem description (optional)
- Email (mandatory)
- Make report publicly available checkbox (by default publish publicly)
- Personal page
 - Edit profile (email, contact details, street/region)
 - List of the user reports with status tracking
- Data visualization
 - Heatmap of reported issues
 - Trend chart of reported issues by time
 - Pie chart of reported issues by status
- Contact page

Reporting

Adding a report

Searching a report

Viewing a report

Report status

Administration

Users/Roles

Administration of categories

Administration/Monitoring of request/reports

Administration of the map

Requirements for the training of the responsible person on the usage of the platform

The contractor should design a user guide for the webpage and provide training for the person responsible for the usage of the platform.

Requirements for the duration of performing the task

The web-platform eu.chisinau.md should be launched within 50 working days since the moment the contract for website development service provision is signed.

System requirements for hosting, platform

There is no requirement for the framework, but priority shall be given to Open Source platforms. The portal shall be placed on Government Cloud - MCloud.

At the development phase, the website shall be placed on the Contractor's server, to which UNDP Moldova/ Municipality shall also have access to test and upload content.

After finishing the works, the Contractor shall transfer the website and database on the server chosen by the Customer.

Optimization for Search Engines (SEO) and Social Networks

The website shall be developed and optimized so as to be properly indexed by search engines.

Some of the requirements are:

- It shall be possible to edit META tags through the Admin panel. META tags shall be common for the entire site, but it shall be possible to indicate other META tags for other pages;
- Creating XML Sitemap;
- The website styles shall be kept in a separate file.

The website (and any of its pages) shall be optimized to be easily and properly distributed through social networks (open graph, card validator, etc.).

Testing

The functionality of web platform should be ensured by developing company by providing the relevant tests.

Warranty period, bug fixing

During 2 years after delivering, the developing company should provide bug fixing.

Documentation and Training

The developing company should provide User, Installation and Administration Guides in Romanian and Russian languages.

Definitions and terms used in the document

Abbreviation/Acronym	Description
API	Application programming interface
CAPTCHA	A CAPTCHA is a type of challenge–response test used in computing to determine whether or not the user is human.
FK	Foreign key. In the context of relational databases, a foreign key is a field in one table that uniquely identifies a row of another table or the same table.
META tags	Meta tags describe a page's content.
OWASP	Open Web Application Security Project
Responsive design	An approach to web design that makes web pages render well on a variety of devices and window or screen sizes.
REST	Representational State Transfer
SQL	Structured Query Language. SQL is used to communicate with a database.
UNDP	United Nations Development Programme
XML	Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.

Expected Deliverables and estimated timing

	Deliverables	Estimated timing
1.	Identifying the project goals and functionality, finalizing the technical specifications, requirements and finding solutions to potentially challenging issues / Complete functional and design specifications.	5 Days (13 April 2019)
2.	Creating basic system architecture and visual design (UI/UX) / Draft system architecture, final product design.	7 days (20 April 2019)
3.	Software development process. / Full-featured functioning software product.	30 days (20 May 2019)
4.	Quality assurance process. / Finalized software product of the required quality.	5 days (20 May 2019)
5.	Training / Training for city hall employees organized and successfully conducted.	1 days (21 May 2019)
6.	Deployment, maintenance and support / Software maintenance and support for a specified period. Up-to-date software product.	2 days (23 May 2019)
7.	Technical documentation development/Complete deployment guide, installation guide, user and administrator guide	23 May 2019
8.	<i>Development of mobile app</i>	<i>20 working days</i>

Payment schedule

Nr	Delivery	Payment
1	Identifying the project goals and functionality, finalizing the technical specifications, requirements and finding solutions to potentially challenging issues / Complete functional and design specifications. / Creating basic system architecture and visual design (UI/UX) / Draft system architecture, final product design. / Creating basic system architecture and visual design (UI/UX) / Draft system architecture, final product design.	30 %
2	Software development process. / Full-featured functioning software product. Quality assurance process. / Finalized software product of the required quality / Training / Training for city hall employees organized and successfully conducted. / Deployment, maintenance and support / Software maintenance and support for a specified period. Up-to-date software product. Technical documentation development/Complete deployment guide, installation guide, user and administrator guide	70%