Design of a mobile application tool that enables visualization and communication of risk scenarios to endusers

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Partner in Charge	UNIFE, MUNKA
Partners involved	UNIFE, MUNKA
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WAVESs - Croatia territory

In this delivery, friendly-user mobile application WAVES SEAFRONT MONITORING was made and delivered. It is a digital system for monitoring sea level changes in the part of Kaštela Bay near Kaštel Kambelovac, which allows users to interactively view the current sea level.

A mobile application tool is designed that enables visualization and communication of risk scenarios to end-users

In a total of 10 zones, the system shows the current sea level, wind speed and direction, atmospheric pressure and indicates the degree of danger of sea level rise in color:
GREEN = SAFE: sea level is below shore level
YELLOW = WARNING: the sea can exceed 20 cm above the height of the shore
ORANGE = DANGEROUS: the sea can rise up to 50 cm above the height of the shore
RED = FLOODED: the sea exceeds 50 cm above the height of the shore

The aim of the system is to warn users of risky changes in sea level in order to prevent damage to vessels and facilities along the coast in a timely manner.

Information about the mobile application was also placed on the informative permanent board of the PMO-GATE project on pilot site in Kaštel Kambelovac.

Cross-platform mobile applications that enable users access and interactive overview of the current sea level, discretized by segments of the coast, considering the height of the coast.

Google Firebase server component that executes the algorithm
assessments based on data from the sensor it communicates with, and
serves as a server of these results, and performs user authentication.

Directly, the integration of data from sensors that publish data on TheThingsNetwork (TTN) cloud solution that collects data on air pressure, wind speed and direction.

Below we attach few photos of mobile application:

Figure 1: Login interface

Figure 2: Map interface

The front-end, i.e. the application interface, contains:

A. Login interface (Figure 1) – the initial interface for users opening the application:
1) Form - the user enters his login information (e-mail and password), and has the option to register if he does not have one user account by clicking on the appropriate link
2) Prominent logo - the project was realized as part of the Interreg PMO-GATE collaborations

B. Registration interface (not shown). Registration interface it is analogous to the login interface, except that it allows the user to by entering your access data, create a user account for access application. With the aim of simplifying the login to the system, there is none special validation of user accounts such as e-mail confirmation.

C. Map interface (Figure 2).

It represents the central part of the application and contains the basic ones functionalities:

3) At the top there is a drop-down menu where the user has a choice between three languages: Croatian, English and Italian. By clicking on one option, the interface text adjusts the interface language.

4) Button to log out of the application.

5) Values read from the sensor, updated in time depending on to how often data from TTN arrives. From top to bottom, height of the sea is the sum of the heights caused by: sea change, speed and wind direction, and atmospheric pressure. The total height is calculation based on the algorithm provided by the Client.

6) Google maps map with corresponding drawn polygons discretized segments of the coast with regard to their heights. The color of the zone corresponds to the early warning status: green - safe, the sea level is below the level of the coast. Yellow - warning, the sea can pass up to 20 cm above the height of the coast. Orange - dangerous, sea it can grow up to 50 cm above the height of the bank. Red - flooded, the sea exceeds 50 cm above the height of the coast. By clicking on one the card zone will position itself to the corresponding zone a the map will be centered on the selected zone.

7) Zone cards showing names and photos of coastal zones. Here the user can accurately see the height of that segment of the coast, the estimated height of the sea in relation to the zone, and consequently the situation in that zone, coded in colors analogous to the zones on maps. By moving the tabs left or right, the user can focus certain zone, and the map will be centered on that zone.

8) Notification button. By clicking this button, individually for each zone, the user can mark whether he wants to receive notifications when the situation in a certain zone changes.

Comune di Ferrara Protezione Civile - Italian territory

To ensure ease of use, diffusion, durability of the mobile application and optimize resources, we have decided to create the Telegram channel "Comune di Ferrara Protezione Civile" (Municipality of Ferrara - Civil Protection).

The Civil Protection of Ferrara will continue to use the telegram channel even after the end of the Project to communicate information relating to alerts and protection activities.

Just download the Telegram app that is available

free for Android, iPhone, iPad and Windows Phone.

Once the user created their profile it will be sufficient to subscribe to the channel "Comune di Ferrara Protezione Civile" to receive the information always maintaining the privacy of the your profile and your number.

The Telegram channel "Municipality of Ferrara Civil Protection" was disclosed and made available to citizens and also advertised on the brochures produced by the Civil Protection. (https://www.italy-croatia.eu/web/pmo-gate/-/civilprotectiontools)