

PUBLIC WARNING MESSAGES IN PREFERRED LANGUAGE

LAYMAN'S REPORT



Photo credit: www.freepik.com

With the support of the EU funding, the Ministry of the Interior, State Infocommunication Foundation (RIKS), Levira and mobile operators developed by the end of May in 2025 a solution for sending location-based warning messages either in Estonian, Russian or English pursuant to the preferences set by the owner of the phone number at their operator. It means that sending warning messages is now faster and clearer. No other country currently has such a solution.

SUMMARY

Since early 2023, Estonia has utilised a location-based SMS Public Warning system. SMS-s are limited to 160 characters in Latin alphabets or 70 characters in non-Latin alphabets. The amount of time it takes to deliver all SMS-s depends on the throughput of the mobile network operators (MNO) SMSC-s, previously, alerts varied by SIM origin but not by language. While 67% of residents speak Estonian and 28% Russian, many foreign students, workers, and refugees use local SIMs without speaking Estonian fluently. Therefor warning messages to local SIM cards were sent in multiple languages in one text making the warning message long. To deliver such a long message an average of 5-9 SMS-s was needed to be sent to a recipient. Today, after the deployment of preferred language functionality, we send a warning message to each local SIM card just in the preferred language of the SIM card user, making the warning messages five times shorter in terms of the amount of SMS-s, therefor five times quicker to deliver, cheaper and easier to understand. The project also enhanced mobile operator databases and facilitated the provision of personalised numbers across service providers.

BACKGROUND

The EU Disaster Resilience Goals emphasize the importance of accessible, multilingual early warning systems for all citizens, including those in cross-border areas or traveling. In line with this, Estonia implemented Article 110 of Directive 2018/1972 by launching a location-based SMS alert system (LBAS) in early 2023. The system sends emergency messages with the sender's name "EE-

ALARM" for local users and "59500000" for roaming users, with the ability to tailor messages by SIM country code and language.

The multilingual approach enhances response effectiveness, particularly for vulnerable groups like the elderly and children. Estonia's early warning strategy also aligns with its broader national security priorities, including threats from Russia, cybersecurity, migration, and climate change. Historical, cultural, and migration patterns have shaped Estonia's communication policy, which now prioritizes clarity and accessibility in crisis communication.

The theoretical rationale behind the importance of receiving warning messages in one's mother tongue and using their own alphabet is based on the principles of linguistic processing, linguistic relativity, and readability. The concept of linguistic relativity posits that the language we use exerts an influence on our thought processes and our perception of the world around us. It should be noted that individuals may process information differently depending on the language in which it is presented. The use of a person's own alphabet can facilitate reading and comprehension of warning messages. For instance, an individual accustomed to reading the Cyrillic script, as used in Russian, may encounter challenges when reading a warning presented in the Latin script, such as that used in English. Prior to the implementation of the system, testing was conducted in late 2022. During this testing phase, a range of threat notification messages were prepared and delivered to pre-registered numbers. Scientific literature has reported that one possibility is to use the Latin alphabet instead of Cyrillic. Implementing this solution enabled the test site to transmit threat notifications in a more efficient manner, reducing the number of SMS messages from eight to one to three.

THE MAIN EXPECTED OUTCOMES

- People understand the warning messages better and faster (if it is only in one language - my preferred language);
- The LB-SMS alerts get delivered faster to all recipients as the overall length of the message and the number of SMS-s decrease (no need to include three languages in one communication);
- The overall effectiveness to contact hard-to-reach audience (for example, elderly, kids or other more vulnerable societal groups with little or no digital and Estonian language skills) as receiving messages only in their preferred language create less confusion;
- The LB-SMS is more cost-effective as the number of SMS-s that need to be sent out decreases.

KEY FUNCTIONALITY REQUIREMENTS

In addition to 3 needed languages, we introduced the 4-th "**Unknown**"

- For number users who cannot set the language
- For number users whose language selection has not updated yet
- For any other reason (e.g. account-based selection)

Solution needs to be integrated with the **MNOs language datasets** that is kept within the MNOs infrastructure.

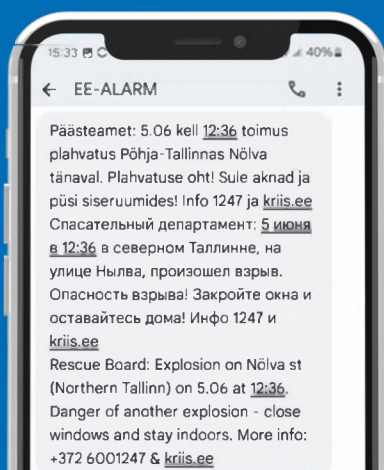
- Language data needs to be updated at least every 24h
- LB-SMS channel will keep working if the language data is corrupt or missing.
- An alarm will be raised if the language data is corrupt or missing.



Funded by
the European Union

The project is funded by the European Commission grant (UCPM Project Grants) "Public warning messages in preferred language" (project no 101142969).

PUBLIC WARNING MESSAGES YESTERDAY



PUBLIC WARNING MESSAGES TODAY

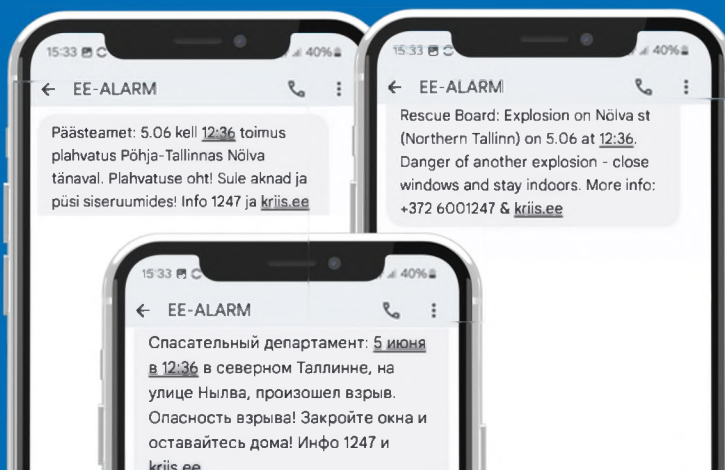


Photo credit: Ministry of the Interior, Estonia

HOW IT WAS DONE

All Estonian MNOs developed methods to collect and maintain the preferred language data for each of their mobile number users and generate a language mapping file and import it to the EE-ALARM system at least every 24h.

The EE-ALARM platform's user interface has three new categories (in **bold**) for sending messages:

Language category (new)	Language preference	Message sent in
Estonian (Estonia)	Estonian	Estonian
Russian (Estonia)	Russian	Russian
English (Estonia)	English	English
Unknown	not known	Estonian and English
Inbound roamers (tourists)	English	English

The Public Warning Centre (PWC) system interface is mirrored to crises management platform.

Pilot test from 20 January to 20 February 2025.

PROJECT CONCLUSIONS

A nationwide test in May confirmed that the solution works.

 The total number of SMS-s **decreased by about five times.**

 The time to deliver the messages **decreased by about five times.**

 Costs **decreased by about five times.**

 Language options corresponded to the population distribution.

 **Less than 2%** of respondents received the message not in their preferred language.

PROJECT PARTNERS



REPUBLIC OF ESTONIA
MINISTRY OF THE INTERIOR

smiit



levira

everbridge™

elisa

TELIF2

Telia

REPORT WAS
MADE BY



REPUBLIC OF ESTONIA
MINISTRY OF THE INTERIOR