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LET'S TALK

How Cell Broadcast speaks your language

For emergency alerts to be effective, they need to reach the right people, at the right time with a clear call to action. How do authorities ensure that recipients understand the guidance to safety, even if they don't understand the local language?

While there are some country-specific adaptions in the various wireless emergency alert requirements, when it comes to the essential ones, there are commonalities across them all. Two of which are at the crux of effective emergency response. They are that the alert should reach the maximum of a population in the emergency area, with the purpose to attract their attention and initiate a call to action.

Taking one of the specific adaptions, in the latest BEREC Guidelines (June 2020), they refer to Recital 293 of the European Electric Communications Code (EECC). Here it mentions that authorities should transmit public warning alerts to 'all' end-users concerned. Why? So that the recipient can take appropriate action. For instance, "evacuate to higher ground above and beyond designated tsunami hazard zones or move to an upper floor of a multi-story building."

Although EECC doesn't stipulate how the authorities should transmit to 'all' should be achieved, BEREC "considers that one factor of reaching concerned end-users in the most efficient way is sending the warning messages in the recipient's language." The message's language undoubtedly plays a vital role in understanding what's required, which leads to faster reaction times of the end-users.

No multi-language support?

When discussing Cell Broadcast (CB) for Public Warning solutions, there are sometimes, one or two people who will raise concerns about its relevancy. For instance, they casually dismiss its applicability, claiming that there's no multi-language support.

Are they right to do so? No.
Often, it just stems from the old pre-Commercial Mobile Alert System (CMAS) perception of CB.

But, before we get into how CB supports multiple languages, it's important to touch on industry standards briefly.

Role of industry standards

One of the crucial aspects that CMAS introduced was decoupling the CB user experience from the delivery mechanism. As a result, CB emergency alerts' user experience is standardized in ATIS, under the new name for CMAS - Wireless Emergency Alerts (WEA).

Although from a CB technology perspective, it's always been possible to encode different languages. There are different data coding schemes assigned for each language.

It is the WEA requirements that ensures that CB multi-language support is now user-friendly.

In turn, 3GPP incorporated the WEA requirements for international application. With our very own, Peter Sanders, playing an active role in the readiness of specification 3GPP TS 23.041 “Technical realization of Cell Broadcast Service (CBS).”

The How – a simple overview

As everyone’s technical understanding varies, let’s start with an overview before delving into the 3GPP specifications.

There are two-channel ranges for emergency alerting when it comes to the Cell Broadcast service: primary and secondary.

The primary channel range is used for a default language, and messages will be presented in the language of the country you're in when you receive the alert. For example, in the Netherlands, the alert on the primary channel range will be in Dutch. If you're in Taiwan, it will be in Chinese, etc. If the Dutch Government issues emergency alerts in multiple languages, it would be possible to receive Dutch and English alerts. That is, if English was the multiple language selected by the Dutch Government.

It is the secondary channel range which provides the flexibility to set the language you prefer. For this to be enabled, the CB client needs to have multi-language support.

The How – a deeper dive

Now, for a look into the 3GPP specifications.

3GPP supports multiple languages through the combination of

- Message Identifier (MI)
- Data Coding Scheme (DCS)

3GPP specification TS 23.041 assigns the MI into mandatory and optional to receive and display in line with the CMAS and EU-Alert Descriptions.

Have a look at the table below for the full picture.

MI	CMAS Description	EU-Alert Description		Comment
4370	Presidential level alert	EU-Alert Level 1	Mandatory to receive	
4371-4372	Extreme alert	EU-Alert Level 2		
4373-4378	Severe alert	EU-Alert Level 3		
4379	Missing Child alert	EU-Amber		
4380	Required Monthly Test	Not specified		
4381	Exercise	Not specified		Handling on UE is not specified/supported
4382	Operator defined use	Not specified		Handling on UE is not specified/supported
4396	Public Safety alert	EU-Alert Level 4		
4398	State/Local test	EU-Test		
4383	Presidential level alert	EU-Alert Level 1	Optional to receive	
4384-4385	Extreme alert	EU-Alert Level 2		
4386-4391	Severe alert	EU-Alert Level 3		
4392	Missing Child alert	EU-Amber		
4393	Required Monthly Test	Not specified		
4394	Exercise	Not specified		Handling on UE is not specified/supported
4395	Operator defined use	Not specified		Handling on UE is not specified/supported
4397	Public Safety alert	EU-Alert Level 4		
4399	State/Local test	EU-Test		

What's the difference between the two: mandatory and optional? In addition to supporting the alert severity and alert type that end-users can opt-in/opt-out from, it comes down to whether the alerts within that range can use a language filter mechanism.

The mandatory MI range can't use the filter, whereas the optional range can. For the latter, in addition to using language filter mechanisms, the mobile device may use the language(s) selected through the Man-Machine-Interface (MMI) to determine whether to display a particular CB message.

The second aspect of multi-language support is covered in 3GPP TS 23.038 – DCS.

The DCS indicates the message's intended handling at the mobile device - the character set/coding and the language. It may be possible to select one or more languages in the MMI of the mobile device where the CB function resides. If a language is selected, the device will only display messages with that same DCS. The device will discard non-DCS selected messages. This makes it possible to broadcast PWS alert messages in various languages with the same MI.

Alternatively, the device selects the language based on the language of the MMI itself. In that case, no additional languages can be selected.

Here's an example to put it into context.

Country X wants to broadcast PWS messages in the local language - Spanish, which everyone should receive who has activated the PWS service and English for visitors from other countries. Receiving English messages is optional. The same MI is used to broadcast all the messages.

The following MIs should be used:

MI	Description	Comment
4371	Alerts broadcasted in Spanish	Messages in Spanish will be displayed if the user has selected this level of alerts to be displayed and regardless of any language setting.
4384	Alerts broadcasted in English	Messages in English will be displayed only if the user has selected this level of alerts and has also selected English in the language menu. Note: This user will also see the Spanish version of the message that is broadcasted with MI=4371.

Don't just take our word for it

Both the BEREC Guidelines and EENA's Public Warning Systems update, version 3.0 highlights the multi-language support of CB.

BEREC uses the EU-Alert as an example. It states, "CB with the EU-ALERT standard even automatically displays the correct language as selected by the recipient on their device, when receiving a warning message in several languages."

EENA, on the other hand, observes in their report, "Messages can be broadcast in any language and displayed depending on the mobile device's language settings. This is the case in the United States with Wireless Emergency Alert (WEA) 2.0."

And, as we know from earlier, 3GPP incorporated the WEA requirements for international application.

Importance of selecting a standards based Public Warning Solution

The international Telecommunication standardization bodies (e.g. 3GPP, ETSI, ATIS) have acknowledged CB as the most viable mobile technology for implementing Mobile Emergency Alerts in 2G, 3G, 4G & 5G networks.

As the only technology service standardized for emergency alerting, CB meets all the emergency warning requirements, be it EU-Alert, W-PAS, KPAS, ETWS, EMA, CMAS, WEA, to name a few.

one2many is the pioneer behind Cell Broadcast. As an active participant in the standardization bodies, one2many plays a leading role in defining the emergency alerting standardization requirements and end-user experience. This active involvement ensures that up-coming market requirements are incorporated into standards. An added bonus is that the one2many CB Solution product roadmap is assured to be standards-based and future proof.

Now that's good news, in any language!

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