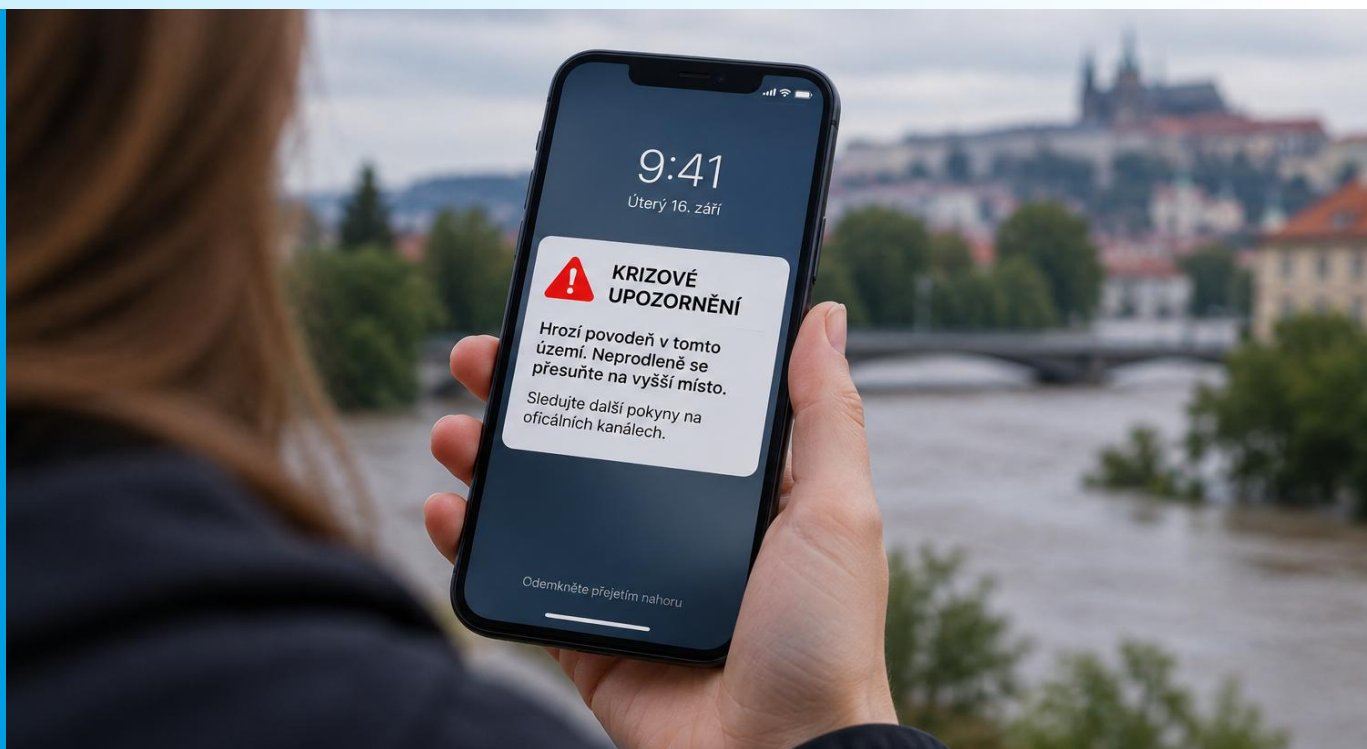




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From Alert to Action: How States Communicate in a Crisis

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Abstract

A flood is approaching, a dangerous substance leaks, or a violent attack occurs. A few minutes will decide people's safety. The state's first task is to warn the population immediately. However, warning of danger isn't enough. At the same time, a person needs to quickly understand what is happening, whether the threat affects them, and, above all, what they should do. The ability to translate warnings into specific actions in an environment of rapid information flow is becoming one of the key components of the state's communication and its crisis and security preparedness.

Summary

- Cell Broadcast significantly shortens the technical path of the alert to the citizen, but fast delivery alone does not guarantee a fast, proactive response.
- With the increasing speed of technology, the central place of the system is shifting to the decision-making institutions, the quality of the first message and the ability of the state to coordinate subsequent communication.
- The effectiveness of a modern crisis warning cannot be measured only by the moment the message is delivered, but by how quickly the citizen understands the information and is able to act on it.

The Czech Republic is facing a significant technological change. By the end of 2026, the Cell Broadcast system is to be put into operation, which will allow an alert to be sent to a virtually unlimited number of people on their mobile phones in a precisely defined area in a short time. Unlike classic SMS, there is no need to know the phone numbers of specific recipients, as the system allows you to hit a device located directly in the endangered area. In addition, the Czech system counts on the use of the CAP protocol, thanks to which the warning can be connected to other communication channels and information systems (Fire Rescue Service of the Czech Republic [HZS ČR], n. d.).

Cell Broadcast has the ambition to eliminate one of the significant weaknesses of the current warning to the population: the delay in the actual distribution of the alert to a large number of people. At the same time, however, the new system highlights another problem. The speed with which the state can deliver a message is not identical to the speed with which it can create, verify and turn it into a citizen's action.

The technology itself solves the main last part of the journey between the institution and the telephone. Before the alert is sent, the threat must first be evaluated, a decision must be made to activate the system, and a clear instruction must be created. Therefore, the Decree on the Operation of the Public Alert System sets out not only the technical method of distribution, but also the decision-making chain: the initiative of the authorized authority is assessed by the National Operational and Information Centre of the Fire and Rescue Service, which can modify the text of the alert and then forward the request to mobile operators. After receiving it, they should start transmitting the message immediately.

But the whole process is still not over. A received warning does not automatically mean a protective reaction. A person must read the message, understand it, evaluate its credibility, apply the threat to their own situation, and decide how to act. Cell Broadcast's research draws attention to the difference between technical latency, i.e. the speed of message delivery and social latency, i.e. the time that elapses until the actual response of the recipient. In the Spanish ES-Alert exercise, the median of this response was one minute and twelve seconds, although the message itself could have been delivered almost immediately (Medina Morales & Máyer Suárez, 2025). Therefore, the authors point out that the speed of technology alone is not a sufficient measure of the effectiveness of an early warning system.

This is probably the biggest challenge of modern crisis communication. The information environment fills up very quickly during an emergency. People are looking for more and more information, comparing sources, contacting their surroundings, and trying to find out if they should take the threat seriously. However, it is not only important for the state to reach the citizen technically, but it must offer them information at a critical moment that is sufficiently fast, trustworthy and practical.

Warning is not the same as action

The idea of an effective crisis warning is quite simple: the state recognizes the danger, sends a warning, and the person acts on it. In reality, however, the process between receiving a message and a protective response is much more complex. People must first record the warning, understand its meaning, evaluate whether it really applies to them, then assess the credibility of the source, and finally decide between the available options. Only then does the actual action follow. This sequence is captured by the Protective Action Decision Model, one of the most widely used frameworks for explaining the public's response to emergencies (Lindell & Perry, 2012).

Importantly, receiving a message is not the end state of the entire warning, but only the beginning of the entire decision-making process. A person who receives information about a chemical accident

or an impending flood on their phone does not have to automatically close the windows or leave the endangered area. They will probably first turn on the news server, look at social networks, call loved ones, or watch how people around them react. This behavior is called milling – the process of searching, comparing, and confirming information before a person proceeds to act. It is not necessarily an irrational or undesirable reaction. In an uncertain situation, trying to verify the unexpected information is natural. However, for crisis management, it represents a time during which a person has not yet taken the recommended protective measure.

It is the quality of the first message that can affect this delay. Experimental research on public alerts shows that more information-rich messages that provide people with more evidence to understand the threat and decide what to do next can reduce the need to look for further confirmation. Brevity is not automatically an advantage. The message must be short enough for a person to read quickly, but at the same time complete enough not to have to find out what it actually means and what is expected of it (Wood et al., 2018). Thus, the success of a warning depends not only on the speed and reliability of distribution, but also on how recipients interpret the content of the message and whether they actually act on it.

Therefore, it is useful to distinguish between three different types of delay to evaluate a modern warning system. Technical latency refers to the time it takes for an alert to be delivered to a device. Institutional latency can be used to refer to the time between the recognition of a threat and the moment when the state is able to decide on a warning, prepare a message and send it. Finally, social latency captures the time between the delivery of information and a person's reaction. The latter is also supported by research from the Spanish ES-Alert system, which shows that even with virtually instantaneous technical delivery, a measurable gap remains before the recipient responds (Medina Morales & Máyer Suárez, 2025).

Threat → the State's decision → create a report → deliver → understand → conduct

Cell Broadcast can significantly speed up the middle technical step of the entire chain. However, it cannot fail to eliminate the delay before sending a message or the uncertainty that may arise after receiving it. Therefore, the faster the distribution is, the more important the quality of what precedes and follows it will be.

The first message is decisive: what one needs to know

In the first minutes of an emergency, the state usually does not have all the information. The situation is evolving, the extent of the threat may not be known, and some facts are yet to be verified. However, this is not a reason to wait with communication. The first message may not give a complete picture of the situation. It must contain enough information to be able to make the first safe decision.

Several elements are repeated across different types of threats. Typical "who, what, when, where, how". A person needs to know who is sending the message, what happened, where the threat is, what to do, and how long the recommendation is valid or when to expect more information. Identifying the source helps to assess the credibility of the message, accurate localization allows a person to relate the danger to their own situation, and specific instructions reduce the room for uncertainty. The last point is crucial: there is a fundamental difference between the message "there has been a leak of a dangerous substance in the area" and the instruction "do not go outside, close windows and turn off ventilation" from the point of view of protecting the population. The first piece of information describes the problem. At the same time, the second creates an opportunity to act.

The Dutch methodology sets out six basic components of such a report: the identification of the NL-Alert, the date and time, a description of the risk and its sources, the location or area affected, the recommended action, and a link to a place where further information can be obtained (NL-Alert, 2025). The logic is simple: a short mobile alert cannot explain the entire crisis, but it must safely guide a person to the next step. The US recommendations for Wireless Emergency Alerts work in a similar way. FEMA requires an effective report to clearly identify a trusted sender, describe the event, define the location, indicate the protective measures, the time perspective, and offer a link or phone number for further information as needed (Federal Emergency Management Agency [FEMA], 2022). An analysis of 6,080 U.S. mobile alerts sent between 2012 and 2022 found that all five essential elements – source, threat, location, recommended action, and time – were contained in only 8.5% of the messages examined. The authors point out that more complete messages can improve understanding and trust while limiting the delay before a protective response (Olson et al., 2024).

The Czech paradox: fast technology, but how fast is decision-making?

The Czech population warning system is not empty before the arrival of Cell Broadcast. It still relies on the Unified Warning and Notification System, primarily sirens and local information systems. The "General Warning" signal itself is intended to attract attention; this is to be followed by emergency information that explains what happened and how people should behave. In addition, the state uses localized SMS, media, websites, social networks or other means of the integrated rescue system.

Cell Broadcast is intended to improve this infrastructure with speed and more precise targeting. According to the Fire Rescue Service, it will be possible to reach a virtually unlimited number of mobile devices in a defined area within a few minutes. However, the Czech proposal does not envisage Cell Broadcast only as an isolated channel – the full implementation of the CAP protocol is to enable interconnection with mobile applications, information boards, crisis management systems and social networks (Fire Rescue Service of the Czech Republic, n.d.-b). The decision-making chain is clearly defined by Czech legislation: the activation of the system is carried out by the National Operational and Information Centre of the Fire Rescue Service of the Fire Rescue Service on the basis of its own findings or initiative of an authorized authority.

Depending on the type of event, this can be, for example, the Police of the Czech Republic, the Fire Rescue Service of the Region, the Governor, the mayor of a municipality with extended powers, the Ministry of the Environment, or the State Office for Nuclear Safety. The complaint must contain the nature of the danger, the time indication, the proposal of the affected area, and also the draft text of the alert. The National Operations and Information Centre will then assess the justification for the activation and may modify the text (Decree No. 535/2025 Coll., 2025). Only then does the mobile operator enter the process, which is obliged to start transmitting the alert immediately after receiving the request. The message itself should contain the nature of the danger, the affected area or source of the threat, the appropriate procedure for the recipient, and the exact time of system activation.

For technical distribution, there is a clear requirement for immediate action after the message has been handed over. However, the publicly available legal framework does not imply an equally specific time standard for the entire process that precedes the sending: from recognizing the need to warn, through the creation of the complaint and text, to its assessment and activation of the system. This in itself does not mean that Czech decision-making will be slow. However, it shows that once the technical delay is removed, this part of the process will be much more important. The technology can only deliver a message that has already been created.

Therefore, it will be essential for the functioning of the system how the legal framework will be translated into everyday crisis practice. Whether there will be pre-prepared message structures for typical situations, whether individual actors will know exactly when to use Cell Broadcast, how quickly the text can be edited and approved, and whether one authorized piece of information will be simultaneously transcribed into other communication channels.

The experience of the floods in September 2024 shows that crisis communication is definitely not starting from scratch. The subsequent evaluation identified positive early meteorological warnings, communication between flood authorities, and more intensive communication with the media and the public, including the use of social networks. Timely information made it possible to start preparatory measures before the flood culminated and, according to the final evaluation, significantly mitigated its effects (Ministry of Regional Development [MMR], 2025).

Floods show a significant difference between an event for which there is a relatively long time advance and a crisis in which only minutes are decisive. In extreme weather, the space between the first forecast and the immediate threat can be measured in hours or days. In the event of a chemical spill, a violent attack, or some technological accidents, it can be significantly shorter. Technology sets a new standard of speed, to which the processes around it will have to adapt. Cell Broadcast can shorten the path of a ready-made alert to a citizen to a minimum. However, the question remains whether the path from the first recognition of the threat to the moment when the state is ready to send this alert and then explain it across all other channels without contradictions will be just as short.

Experience from abroad: Cell Broadcast as part of the system, not a substitute

The introduction of Cell Broadcast alone does not create a modern crisis warning system. The decisive factor is the communication strategy in which the technology is embedded. Countries that have been working with it for a long time are therefore increasingly interconnecting individual channels, unifying the form of alerts and monitoring not only whether the message has arrived, but also whether people have understood it and were able to act on it.

Germany is a striking example. Its MoWaS modular warning system is built on the principle that one authorized alert can be distributed via multiple channels at the same time. In addition to Cell Broadcast, these include, for example, warning apps, radio, television, the Internet or digital information boards. The German Federal Office for Civil Protection and Disaster Relief directly states that the aim of the system is to enable the available warning channels to be activated from one place and to reach as much of the population as possible (Bundesamt für Bevölkerungsschutz und Katastrophenhilfe [BBK], n.d.). Cell Broadcast is not a substitute for other means, but one of the components of the so-called Warnmix. This is also important because the mobile alert itself has limited space for a more detailed explanation of the situation.

The Dutch NL-Alert system places greater emphasis on the uniformity of the message itself. Its current methodology is based on the requirement for timely, consistent, and reliable communication and stipulates that each message should be separately understandable. It must include the identification of the sender, time, risk description, location, specific recommendations for action, and a link to further information. The same logic applies to follow-up messages: a citizen cannot be relied on to assume that he has read a previous alert. The methodology recommends one common alert for supra-regional events if possible so that people in overlapping areas do not receive contradictory instructions (NL-Alert, 2025).

The third lesson is offered by Spain. Research on the ES-Alert exercise in Gran Canaria has shown why it is not enough to evaluate the system according to the speed of technical transmission. Although Cell

Broadcast can deliver the message almost instantly, the reaction of the population comes with a certain delay. In the monitored exercise, the median response was one minute and twelve seconds, and more than 70% of participants responded within ten minutes. In addition to technical latency, it is therefore good to monitor social latency, i.e., the time between receiving an alert and a person's reaction (Medina Morales & Máyer Suárez, 2025).

Abroad, we do not find one universal model, but a fairly clear common principle. Fast technology works best when it is part of a unified communication system: one verified piece of information quickly reaches multiple channels, its content has a predetermined structure, and success is not judged only by the delivery of the message.

From quick warning to quick response

The introduction of Cell Broadcast allows the Czech Republic to significantly speed up the warning of the population. However, the speed of distribution alone will not be enough. If the new system is to really shorten the time between the occurrence of danger and the protective reaction of humans, technological modernization must also be reflected in the decision-making of institutions, the creation of messages, and subsequent communication.

1. Measure the entire time from threat detection to alert

After the request is handed over to the mobile operator, the Czech public warning should be disseminated immediately. However, equal attention should be paid to the minutes that precede this moment. Therefore, the state should monitor the entire process during exercises and real events, i.e., from the need to warn, through decisions and the creation of a report, to its distribution.

The purpose does not have to be one universal time limit for all emergencies. A flood, a leak of a dangerous substance, or a violent attack has different dynamics. However, it is possible to set indicative time standards for individual scenarios and then evaluate where the delay occurred.

2. Prepare communication templates before the crisis occurs

The first minutes of an emergency are not a good time to find the correct word order of the first sentence. Therefore, for the most likely types of crises, there should be pre-prepared and regularly tested message structures.

These should not be superficial texts that can be thoughtlessly sent at every event. Above all, the template is intended to ensure that some of the basic information does not disappear under time pressure: who is issuing the warning, what danger is imminent, who and what territory it concerns, what a person should do immediately, and where to get more information. A pre-prepared structure can reduce the time needed to formulate an alert and at the same time increase its clarity.

3. Apply the principle of "one information, multiple channels"

Cell Broadcast should not create another parallel communication system. Its potential lies in the possibility of interconnection with other tools. As much as possible, one authorized information core should be usable simultaneously for mobile alerts, crisis websites, social networks, applications, media, or information boards.

The technological basis for such interconnection is already offered by the CAP protocol, which the Czech system already counts on. However, a clear responsibility for the content is also an organizational prerequisite. In the first phase of a crisis, it must be clear which institution is the main source of information and who is responsible for updating it. The aim is not to limit

the communication of other actors, but to prevent several public institutions from publishing slightly different instructions on the same situation at the same time.

4. Reckon with the fact that the first alert is only the first message

Cell Broadcast has limited space, and in the first minutes, not everything important may be known about the event. An effective system therefore needs a predetermined mode of subsequent communication: the first message should primarily enable safe action. Subsequent updates can complement the scope of the threat, refine recommendations, or respond to the development of the situation. Each of them should be understandable even to a person who has not seen the previous warning. Equally important is the final information about the change or end of the danger. The citizen should not be forced to estimate for themselves whether the instruction they received a few hours ago is still valid.

5. Test people's reactions, not just phones

A successful test cannot be reduced to how many devices received the message and for how long. Technical functionality is a prerequisite, not the final result. Therefore, future exercises should also include an assessment of whether people understood the message, whether they correctly identified the required action, whether they needed to verify the information elsewhere, and whether they were able to react quickly. In other words, in addition to technical latency, it also makes sense to monitor social latency.

Conclusion

Cell Broadcast represents a significant modernization of the Czech population warning system. It removes one of its important technological barriers: the state gains the ability to quickly and geographically precisely reach a large number of people without relying on traditional SMS delivery. However, this also places higher demands on everything that happens before and immediately after the "send" button is pressed.

Therefore, modern crisis communication is not merely an accompaniment to security measures. It is part of them. A warning that a person does not understand, or does not know how to act upon, has only partially fulfilled its function. Similarly, a system that can technically distribute a message within moments will not reach its potential if the creation and coordination of this message takes an unreasonably long time.

In the end, the success of Cell Broadcast will not be measured by the moment the alert appears on a phone screen. It will be measured by how quickly after reading it a person knows what to do, and whether they have reason to believe that this is the information to act upon.

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