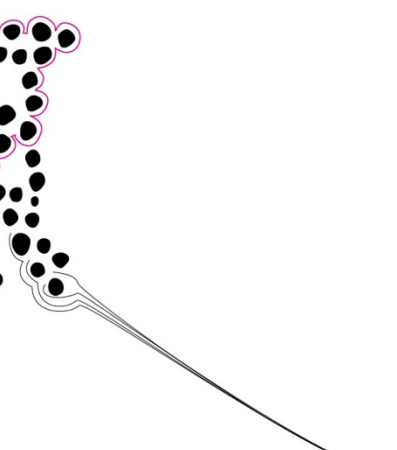




Gebruik en effecten van NL-Alert:

WODC-project 2215

Eindrapportage 1 april 2014



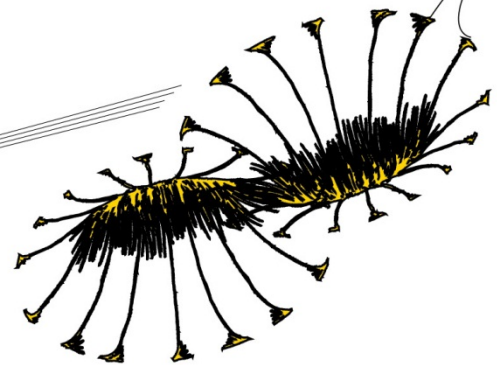
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Gebruik en effecten van NL-Alert

SUMMARY

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Dit onderzoek is uitgevoerd in opdracht van het WODC, afdeling Extern Wetenschappelijke Betrekkingen, ministerie van Veiligheid en Justitie.

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Summary

NL-Alert is a new governmental means to alert people in the direct vicinity of an impending disaster or emergency and to inform them via the mobile phone. A NL-Alert message makes it possible to add an advice about what people should do to react adequately to the emergency, and to adjust this information according to the specific threat. Other means to alert the public like the alarm sirens lack this feature. NL-Alert works through the "cell broadcast" technology and the mobile networks of the providers that are active in the Netherlands (Sanders, 2011). All mobile phones can be reached, when suited and set to receive NL-Alert. Characteristic feature of cell broadcast is that it uses radio frequencies, making the system insensitive to overcharging of SMS and telephone channels (as well as mobile internet). The system is anonymous and people do not need to register.

In November 2012 the minister of Security and Justice decided to start using NL-Alert on a national basis. A mass communication campaign made citizens aware of the best way to set their mobile phones to be able to receive NL-Alerts. These campaigns were held on a regular basis. Furthermore, two national test messages were delivered (in February and November 2013) with the purpose to increase citizen's familiarity with NL-Alert and to motivate citizens to check their mobile phones for its readiness to receive NL-Alert messages. Between November 2012 and 1 February 2014 NL-Alert has been used 23 times to alert the public for emergencies. Twenty-one of these alerts were deployed during medium-sized or large fires with lots of smoke potentially containing hazardous substances. In one case there was a fatality (the fire in Leeuwarden). NL-Alert has been deployed too during the violent storm on October 28, 2013 in the three northern provinces, and during a tornado in Wijk bij Duurstede on November 3, 2013.

In the present study, we focus on the evaluation of NL-Alert in the context of an actual deployment in an emergency, and we examine how citizens can be further activated to properly set their device. As far as we know, this research is the first and only large-scale analysis of the deployment of NL-Alert in response to actual incidents, where public research and research in administrative / operational managers are performed simultaneously. In this summary, we provide a brief overview of the research questions and results and we draw conclusions from the study. Some questions for further study are formulated. The research questions in this study are successively:

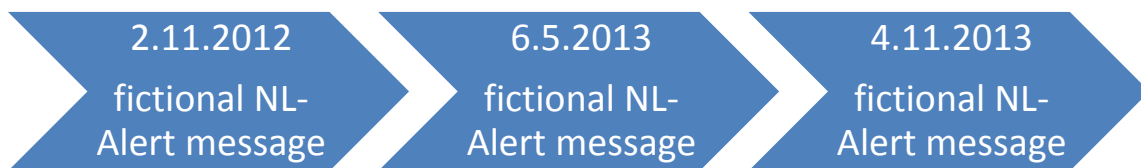
- How many people (percentage) have correctly set their device to receive an NL-Alert and how many people (percentage) actually received an NL-Alert during an emergency, (called "range").
- How do people interpret and experience NL-Alert, both in terms of the NL-Alert message (completeness, relevance, etc.), as well as in comparison with other alerting tools (e.g., siren, emergency channel, crisis.nl) (we call this "experience").
- How people actually act according to the action advice that is specified in an NL-Alert, (called "Effects").

The study with representatives of the administrative / operational emergency services is aimed at answering the following research question:

- In which situations is NL-Alert used or not used, and under what considerations (administrative operational research) (we call this "use").

The six public studies (the audience measurement and the measurements when NL-Alert was actually deployed) are to give a quantitative response to the research questions in relation to the range, the experience and effects. The data are collected with an online questionnaire and partly by telephone. Three measurements were performed in which the respondents were confronted with an NL-

Alert message in the questionnaire (i.e. not via the mobile phone). We call this audience research with a fictional message. In addition, there have been three public measurements soon after an actual deployment of NL-Alert for emergencies in Meppel, Tilburg and Leeuwarden. These are called deployment measurements. We consider the samples collected at the audience measurement with a fictional message to be sufficiently representative of the Dutch population (always $N > 500$). The samples in the deployment measurements are not considered to be representative because they are relatively small in size (between $N = 175$ and $N = 287$) and are linked to specific areas. In addition to the deployment measurements in response to the emergencies in Meppel, Tilburg and Leeuwarden, we did three qualitative studies with administrative / operational members of the emergency services to answer the research question regarding the use of NL-Alert.



The instruments used for public research (both measurement with the fictional message and the deployment measurements) are largely based on theoretical considerations and existing instruments. Theory development is not an explicit goal of this study. The indicators we use to assess the quality of the collected data (Cronbach's alpha) provide a favourable picture. Moreover, the results for the public measurement with the fictional message (in essence, the same measurement, three times, with a few months interval) provide a consistent picture. The researchers attach to this the conclusion that we can answer the research questions regarding range, experiences and effects with good quality data. Side note here is that the measurement of self-reported behaviour is determined by telephone (in the deployment measurements) with a simple yes / no answer. This limits the possibilities of statistical analysis at this point.



The qualitative measurements in the emergency services must do with far fewer participants. In part that is inherent to the study design; there really are not many people involved from the administrative / operational side in the deployment of NL-Alert at an incident. Furthermore, sometimes it proved difficult and time consuming to find participants willing to cooperate. In one of the three cases it took about two months before the data was collected. Unlike with the quantitative audience measurements, it is not possible to provide a quality assessment for the collected qualitative data from the administrative / operational deployment measures. The views presented are mostly regarded as visions of the participating individuals, not the organizations they represent.

The range of NL-Alert

The conclusions to be drawn for the research question "range" are:

- The percentage of respondents that has set NL-Alert on the mobile is increased between November 2012 and November 2013 from nearly 10% to 33%.
- A large part of the group that the mobile phone has not been set, it is ready to do that but apparently needs some motivation to make that step. It is advisable to address this group directly in future publicity campaigns

- A small group of respondents (estimated at 10%) plans to never set NL-Alert on their phone.
- The deployment measurements indicate that between 11% and 37% of the respondents received an NL-Alert.

The NL-Alert “experience”

The conclusions to be drawn for the research question on "experience" are:

- NL-Alert gets a more than average grade by the respondents (on a scale 1 – 10).
- About 90% of respondents attributed the system a grade six or higher (on a scale 1 – 10).
- NL-Alert messages score well on issues such as completeness, comprehensiveness and reliability.
- NL-Alert scores well among respondents on issues such as speed, reliability and ability to assess the threat adequately.
- NL-Alert scored better than WAS (alarm sirens) regarding the ability to assess the situation.

The effects of NL-Alert

The conclusions to be drawn for the research question on “effects” are:

- On average recipients of NL-Alert message (fictional or real) have a greater tendency to follow the given advice than to ignore it.
- The tendency to ignore the given advice is less in an actual NL-Alert deployment (on average 1.1 [Meppel, Oisterwijk] – 1.5 [Leeuwarden]) than with a fictional message (2.1, always on a scale 1 to 5).
- The perceived threat is assessed as higher with a fictional NL-Alert message (on average 3.1) than with an actual NL-Alert deployment (2.5 [Meppel, Oisterwijk] – 2.9 [Leeuwarden] on a scale 1 to 5).
- The assessed effectiveness of the given advice is fairly large in both the studies with the fictitious message as well as the actual deployment (average around 4 on a 5-point scale).
- In an actual deployment, the sense of responsibility towards others (social norm) is considerably lower (2.3) than with a fictitious NL-Alert message (2.9 on a scale 1 to 5).
- In an actual deployment of NL-Alert respondents exhibit greater information needs (on average 3.6 [Meppel, Oisterwijk] – 3.0 [Leeuwarden]) than in a fictitious situation (3.0, on a scale 1 to 5).
- NL-Alert messages are judged as good on aspects like comprehensible, complete and reliable.

Conclusion from the analysis in which respondents read a fictitious NL-Alert message:

- The fictional NL-Alert message leads to a significant increase in the intention to perform resilient behaviour via an increased risk perception, a stronger sense of responsibility (social norm), a greater confidence in themselves and the given advice (assessed effectiveness) and a greater confidence in NL-alert as an adequate warning channel (source credibility, fast, reliable and sufficient to assess the situation).
- The fictional NL-Alert message does not evoke emotions such as fear, anxiety or anger (affective response).

The correlation analysis with the data of the actual deployment measurements indicated that the self-reported behaviour is rather weakly correlated with the evaluation of the various components of the NL-Alert message (sender, situation, location, advice) in terms of being understandable, complete and reliable. Two methodological explanations are conceivable here, which require us to interpret the correlation coefficients with some caution, and they also limit the possibilities to explain the self-reported behaviour by regression analysis. So, subsequent analyses give a mere (indicative) picture of the effects of the NL-Alert message on the self-reported behaviour, and on whether and to what extent the perception variables mediate the effect of the NL-Alert message components on the beha-

viour. The analyses regarding the measurements, in which NL-Alert was actually deployed, yield the following indicative conclusions:

- As the sender and given advice were perceived as more understandable, more complete and more reliable, the confidence in the feasibility and usefulness of the advice increased, resulting in a higher compliance.
- As the description of the location was found more understandable, more complete and more reliable, respondents were more satisfied with the information, resulting in a more closely monitoring of the environment.
- As one perceived the sender, the situation and the advice as more understandable, more complete and more reliable, respondents were more satisfied with the information, resulting in less frequent information seeking, less frequent consultation of others about the best action to take, and less frequent complying with the given advice.
- As respondents better understood the sender of the message and the location, and perceived that information as more complete and reliable, respondents were less anxious, fearful and angry. A more moderate emotional response resulted in a less monitoring of the environment and less compliance with the given advice.

Use of NL-Alert in the managerial / operational sense

The conclusions to be drawn regarding the research question on "use" are:

- In most security regions individuals are trained and / or informed about the use of NL-Alert. This does not mean that all directors and advisors are informed and / or instructed. Most respondents were enthusiastic about the possibilities of the medium NL-Alert; they want to use it more often in the future. The final grade is sufficient (6.4 on a scale 1 - 10). The actual deployment of NL-Alert (in terms of mandate and decision) varies between the security regions. The mandate regulation for NL-Alert deployment is not clear to everyone in the region. Respondents give different answers regarding who (functions and / or consultative bodies) has the mandate to deploy NL-Alert.
- In most regions, the deployment of NL-Alert is linked to a crisis / disaster and thus the GRIP phases. In several regions, the NL-Alert deployment is equal to that of WAS (Alarm sirens). In the surveyed deployments the incidents were large fires with thick smoke which was potentially harmful to the (living) environment. NL-Alert is used in combination with various other means of communication, such as website, social media (e.g., Twitter) and traditional media. However, this was not always prepared, so the communication was not synchronized and some partners (including a municipality) were taken by surprise over the NL-Alert deployment. Respondents also mention that the speed to deploy NL-Alert should increase. According to respondents, this can be accomplished by placing the mandate for the deployment lower in the organization. In addition it was mentioned that the system should then be easily accessible and should function well.
- It is unclear whether in all regions full agreement exists about the type of incidents for which to deploy NL-Alert. In the three surveyed deployments it was not entirely clear to respondents (afterwards) who took the decision to deploy NL-Alert. The considerations to deploy NL-Alert are not always clear to respondents afterwards either, and the researchers do not know whether these considerations were properly recorded. Reasons that were mentioned to use NL-Alert are primarily: speed to reach large audiences, the need to share information / knowledge, the seriousness of the situation, and to reinforce the resilience of citizens. Arguments to not deploy NL-Alert include: population density of the target area, lack of immediate information, and uncertainty about the health-threatening aspects of the incident.
- In some security regions there is discussion about the deployment of NL-Alert either as a communication tool or as an alerting tool. Is NL-Alert an addition to WAS (the Alarm sirens) or is it some-

thing resembling Twitter? Depending on their view, advisors may suggest to deploy NL-Alert later (as a communication tool to send out different messages) or sooner (when it is seen as an alerting tool). When they deploy NL-Alert emergency services must consider the NL-Alert message's lifetime. It is suggested that the message keeps rehearsing when the situation remains the same, and that an automated "end-of-emergency" message should be send.