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Interactive comment on "Design and implementation of a mobile device APP for network-based EEW systems: application to PRESTo EEWS in Southern Italy" *by* Simona Colombelli et al.

Anonymous Referee #2

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This paper addresses a key component of an earthquake early-warning system – a mobile app for the notification of users of earthquake activity and alerts for potentially strong shaking at the user location. The paper gives a concise and apparently complete overview of the architecture, algorithms and operation of the PRESTo EEWS and of the ISNet EWApp, but lacks discussion of the expected performance of the app and alerts.

Specific comments:

1. The paper lacks a section on the expected performance of the EEWS and the EW

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Discussion paper

App with regards to alert timing and reliability. Presentation and analysis of the known, past performance of PRESTo EEWS for detecting and locating earthquakes for ISNet along with expected (and observed, if available) temporal latencies and uncertainties in the ISNet EWApp algorithms and infrastructure should allow the authors to estimate performance. The authors should discuss: alert timing (typical lead times before strong shaking, blind zones, ...; a map would be useful), reliability (error in alert shaking levels relative to possible real shaking levels, ...) for users in different parts of the ISNet region, and issues of latency and delivery reliability raised by reviewer #1.

2. It may be better to issue a generic message like "[intense/strong/weak/..] earthquake shaking expected [in N seconds]" instead of "Drop! Cover! Hold On!" The latter is appropriate for wood-frame structures and probably (statistically) appropriate for denser areas of masonry structures, but may be bad advice for specific cases such as low, masonry and stone construction in rural areas. What happens legally if, though a vast majority of people were safer following the "Drop! Cover! Hold On!" action, some are injured or killed because they followed this advice and remained in structures which collapsed, though they could have easily exited to an open space? Information on actions to take might be disseminated and discussed before hand independently of the app (public information channels, schools, work places) so that people learn that actions to take in strong earthquake shaking are related to their situation. Even if it is decided that "Drop! Cover! Hold On!" is the best and only action to promote in the ISNet EWApp user region, is it appropriate to use this unique action message in the app?

Technical corrections:

1. The phrases "distant event" and "closer event" and similar are used often but sometimes are ambiguous whether the distance is from the user or from ISNet.

2. Line 116: "them" → "themselves"

3. Line 119: "components" → "component"

4. Line 120: " the well recording of teleseismic events" → "high-quality recording of teleseismic events"

5. Line 129: " the damaging" → "damaging"

6. Line 144: "smaller than" → "less than"

7. Line 157: " 2 / 4" → "2-4"

8. Lines 167 and 247: Should the term "issue the warning" be "issue an alert"?

9. Line 168: "a faraway earthquake" → "an earthquake far from the user"

10. Line 188: "In the event of a damaging earthquake" - might be better phrased as "In the event of strong shaking and a potentially damaging earthquake". But is this level simply IMM pred $\geq$ IMM*? In this case, does not this smartphone display mode apply to all events described in this paragraph?

11. Line 205: "is pretty insensitive to distance" → "has weak dependence on distance"

12. Line 208: "has the possibility to notify his own health condition, and to communicate it to a list of pre-defined contacts" → "has the possibility to communicate their own condition to a list of pre-defined contacts"

13. Line 217: "estimate" → "estimates"

14. Line 222: "configured to not" → "not configured to"

15. Line 226: "The alerts sent via FCM can in fact awaken the device even when it is in standby" - is this done through the phone SIM card, mobile phone reception, or Internet? Also remove "in fact".

16. Line 239: "perform earthquake alert notifications, in the event of a relevant damaging earthquake." → "send earthquake notifications, including alerts for expected strong shaking and a potentially damaging earthquake at the user location."

17. Line 250: "expected damage" → "expected damage potential"

18. Line 251: “as well as the instructions for the behavior during emergency times.” → “as well as instructions for mitigating actions for the user.”

19. Line 254: “double communication way” → “two-way flow of information to and from the user.”

20. Line 256: “at the conclusion of the emergency time” → “after the alert period (expected shaking duration) has ended”

21. Figure 5: The statement “Earthquake intensity Not Felt in Sant’Angelo del Lombardi” reads as if the earthquake is not felt in Sant’Angelo del Lombardi, instead of an earthquake in Sant’Angelo del Lombardi is not felt at the user location. Would be better something like: “Earthquake in Sant’Angelo del Lombardi: Your expected intensity: Not Felt”

22. Figure 8: Label which path is an “alert” or “push notification” and which is the “passive mode”.

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