Supplement of

Smartphone applications for communicating avalanche risk information – a review of existing practices

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## Supplement: Additional information

Table S1: Additional information gathered on the smartphone applications, either through the interviews or by using the apps, but that are not of direct use in the paper. The apps are referred to with an ID Number: 1. Avalanche Canada, 2. Utah Avalanche Center, 3. Avalanche Forecast, 4. White Risk, 5. Varsom and 6. SnowSafe.

| INFORMATION                     | OPTIONS                                                                 | APPS ID NUMBER |
|---------------------------------|-------------------------------------------------------------------------|----------------|
| Validity period of the bulletin | Explicit time span                                                      | 1              |
|                                 | Time to the next bulletin                                               | 4, 5           |
|                                 | No (Issuing time of the current bulletin)                              | 2, 3, 6        |
| Spatial coverage                | Whole country (in practice only the Alps)                               | 4              |
|                                 | Most exposed and vulnerable regions                                    | 1, 5           |
|                                 | Most exposed and vulnerable regions + by mountain ranges                | 2              |
|                                 | Several zones of different countries                                    | 6 (full Austria, Bavaria and Slovakian mountains), 3s (Canadian and American Rockies) |
| Terminology for elevation range | “under/above the limit of the forest”                                   | 6              |
|                                 | below treeline, treeline, alpine                                       | 1, 5           |
|                                 | Flexible elevation range according to avalanche problem type (e.g. wind slabs over 500 m.a.s.l) | 5              |
|                                 | By avalanche prone area (e.g. approximately above 2200m)                | 4              |
| Additional visual means         | Interactive tabs for risk management tools and knowledge content       | 4              |
|                                 | Access to traffic pictures                                             | 2              |
|                                 | Upload of pictures from users possible                                 | 1              |
| Possible feedback               | Date, time, location, skiing conditions (amazing, good, ok or terrible), snow conditions (crusty, deep powder, hard, heavy, powder, wet or wind affected), type of riding slopes (alpine slopes, convex slopes, cut-blocks, dense trees, mellow slopes, open trees, steep slopes or sunny slopes), types of slopes that were avoided (same options than the previous point minus dense trees and mellow slopes), weather conditions (cloudy, cold, foggy, stormy, sunny, warm, wet or windy), avalanche | 1              |
| **Language** | **Future update content** | **Operating system** | **Standard for data collection from warning center*** | **Funding** | **Regulation** | **Terms of Use/Disclaimer** |
|---|---|---|---|---|---|---|
| English | Introduce or upgrade the possibility for users to report observations or incidents | IOS (Apple Inc.) | CAAML | Fully public | No regulation to follow | Mainly: warning that completeness, accuracy and/or precision of information is not guaranteed, mention that the apps are not liable for potential damages and losses |
| Avalanche problems in English, the rest in Norwegian | enable users to store the forecast in order to view it where there is no internet coverage | Android (Google Inc.) | Other standard/directly from the websites | Public completed by corporate or NGO funds | Agreement on the use of data with one warning service center | Often: bulletin does not replace practical training |
| Danger level in English, the rest in German or Slovakian | | Possible on Android but website version | | Financed by the developer | | |
| 3 of the 4 Swiss official languages i.e. German, French, and Italian as well as English. | | | | | | |

*Only for apps that are not developed by warning services*