Avalanche Beacons: Ensuring Interoperability and Backward Compatibility

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With detection ranges exceeding 50 meters, and reliable, user-friendly signal isolation of 3 and more transmitters, even located closely to each other, leading-edge beacon technology today scratches physical limits. Well behind these technological frontiers, several less spectacular improvements are being discussed or have already been introduced to the market. Less spectacular, since none of these issues will make such a large difference to the user as true multi-burial support. Technical features and questions investigated are: the proposal to further narrow the bandwidth limits for transmitted signals, the approach to control transmitter pulses adaptively with respect to other transmitters in the immediate neighborhood, and the collection and transmission of a buried person's "vital data". Additional remarks are made regarding widely deployed beacons using a steadily active oscillator and randomization of transmitter pulse parameters. All those more technical details may have a strong impact on (i) future beacons' compatibility with today's models, and (ii) on the interoperability between different vendors. Moreover, even a presumably pure technical feature can influence search and rescue strategies and raise ethic and legal questions. This paper confronts the gain (search strip width, marketing advantages, ...) with the cost in terms of backward compatibility and interoperability issues.