

Collaboration Surrounding Beacon Use During Companion Avalanche Rescue

Audrey Desjardins¹, Carman Neustaedter¹, Saul Greenberg², Ron Wakkary¹ ¹ School of Interactive Arts and Technology, Simon Fraser University, ² Department of Computer Science, University of Calgary









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THE MESSAGE

Avalanche companion rescue is a problem of **distributed cognition**

Avalanche **beacons hinder** rather than leverage distributed cognition

Beacons can be **redesigned** from a CSCW perspective

Backcountry Skiing

Out of bounds - No avalanche control - No ski patrol



Avalanche

A rapid flow of snow down a slope that can catch and bury skiers



Companion rescue

If a skier is caught, his companions need to rescue him IN 10 MINUTES



Step 1: Establish roles and risks





Beacons









Beacons















Step 3: Fine search



Step 4: Probe



Step 5: Shovel

Step 6: 1st aid



Photo: http://mountainhighfreeride.files.wordpress.com/2010/03/img_2155.jpg



VIDEO



Panic, stress Unknown skills during role attribution



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Overlapping or missing search areas



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Multiple burials



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Unclear what victim the searcher is following

Terrain, bad weather, and stress can hinder communication

Using CSCW to frame companion rescue





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MOTIVATION

Rescue success relies on the collaborative process between the rescuers

Beacons are mobile communication devices

Methodology

Interviews

Semi structured

10 participants

4 recreationists
3 avalanche safety instructors
1 pro patrol at Mt Baker
1 backcountry ski guide
1 researcher

Observations

Avalanche rescue scenarios at Mount Baker, Washington

Group A: 15 students of a MEC 2 level class

Group B: 14 pro patrollers

Results - Distributed Cognition

Embodied and externalized cognition and awareness of others is often missing

Ephemeral and invisible data





Results - Distributed Cognition

People focus only on the beacon

Distributed cognition and situational awareness are often lost.

"Beat the myopia of the device" - P8, Head of Avalanche Safety Center



Results - Practice

Over simplistic mock scenarios

Mostly about the use of the beacon, mostly single burials



Design considerations: Visibility

'Seeing' the beacon data on scene - potentially augmented reality



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Beacons communicating together to create a unified perspective



Design considerations: Simplicity

Current beacons rely on an understanding of radio signals and flux lines

Lower the level of interpretation necessary



Design considerations: Support Practice

Give tools to reflect on practice

e.g. tracking movement, time, multiple people, and playing it back



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Audrey Desjardins, Carman Neustaedter, Saul Greenberg, Ron Wakkary adesjard@sfu.ca // www.audreydesjardins.com









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