

# The crisis representation between heterogeneous stakeholders in avalanche management

Aurélie PEILLON<sup>1</sup>  
Sandrine CAROLY<sup>2</sup>,  
Yann LAURILLAU<sup>3</sup>,  
Didier RICHARD<sup>4</sup>

aurelie.peillon@univ-grenoble-alpes.fr

<sup>1</sup>LIP, University Grenoble Alps, 38000 Grenoble, France  
<sup>2</sup>Univ. Grenoble Alps, CNRS, Science Po Grenoble, PACTE, 38000 Grenoble, France  
<sup>3</sup>Univ. Grenoble Alps, CNRS, LIG, 38000 Grenoble, France  
<sup>4</sup>IRSTEA, 38000 Grenoble, France



**Context:** Avalanche management → ‘management of a dynamic risk’: an event with many uncertainties initially and evolving with time.

By taking information from the field and communicating with others, the head of rescue operations try to construct the actual representation of the situation and its possible evolutions of the situation according to the actions carried out.

## Objective of the study

Identify the crisis representation that the different stakeholders involved in the avalanche issue have.

Hypothesis: A common representation between the stakeholders helps to manage the avalanche.

## Methodology



**22 interviews** with actors who have a role in **avalanche prevention and management** in the Northern French Alps: associations, high mountain police, mountain experts, security officer in ski resorts, local authorities and mountain guides.

### Questions:

- **Activities before, during and after avalanches.**
- **Different ways of communication** with the other actors present at the avalanche, on site or at distance.

Prefect	<ul style="list-style-type: none"> <li>• Crisis when territorial extent of the damage</li> <li>• Experts, crisis unit</li> </ul>
Mayor	<ul style="list-style-type: none"> <li>• Crisis when a decision (evacuation or containment) must be made</li> <li>• Mayors, crisis unit</li> </ul>
Security officer - ski resort	<ul style="list-style-type: none"> <li>• Crisis when lot of victims and journalists</li> <li>• Rescuers, chief of security</li> </ul>
Public rescue services	<ul style="list-style-type: none"> <li>• Crisis when lack of information or mistakes</li> <li>• High mountain police, rescuers</li> </ul>
Skiers	<ul style="list-style-type: none"> <li>• Crisis is immediate</li> <li>• Victim, survivor, witness</li> </ul>

Figure 1 : Stakeholders crisis representation

## Results – Expected Applications

Interviews of ski resort staff → At the beginning, the avalanche isn’t a crisis : it’s a natural phenomenon that often occurs, it takes place in the security activities of the ski resort.

Dimensions that increase the crisis:

- **Negative initial conditions:** many victims, difficulties accessing the place, bad weather, and so on.
- **Lack of communication** between different stakeholders.
- **No room for maneuver** to develop their activity.

Elements that vary the crisis:

- The level of **responsibility**,
- The **uncertainties**
- The **extent of the damage** (Fig. 1).

So, understanding people’s representations helps to improve avalanche management (Fig. 2) and develop knowledge about system of activity (Rogalski, 2004) and collective work (Caroly, 2010).

Finally, after an observation phase, we are going to propose a groupware to offer a common operational picture for all stakeholders and improve communication between them.

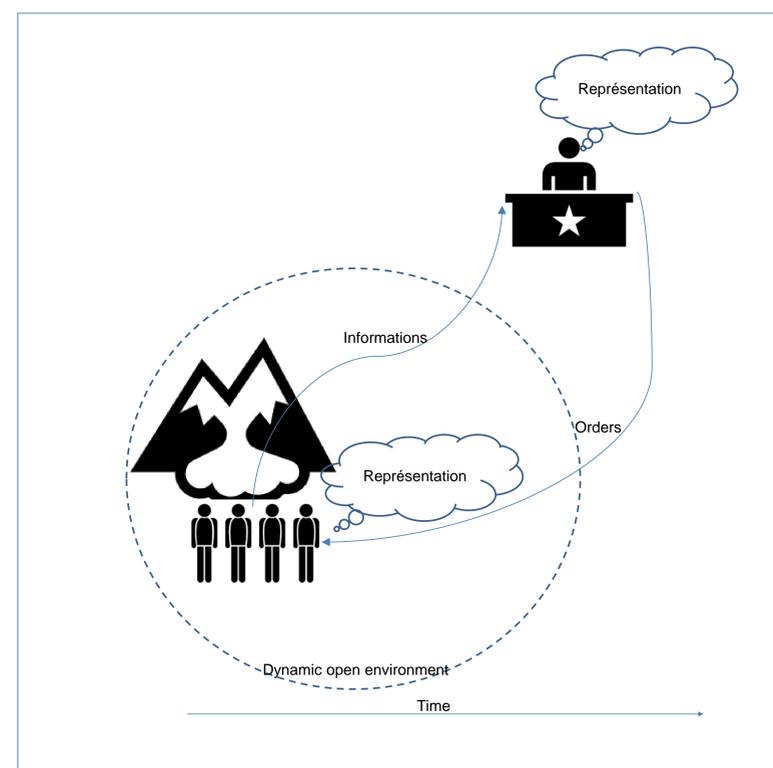


Figure 2 : Common representation between Rescuers and Security Chief



**Risk**  
Univ. Grenoble Alpes



References :  
Caroly, S. (2010). Activité collective et réélaboration des règles: des enjeux pour la santé au travail. Document d'habilitation à diriger des recherches en ergonomie, Université de Bordeaux II. <http://tel.archives-ouvertes.fr/tel-00464801/fr/>  
Rogalski, J. (2004). 32. La gestion des crises. In P. Falzon, Ergonomie (1<sup>er</sup> éd., p. 531-544). <https://doi.org/10.3917/puf.falzo.2004.01.0531>