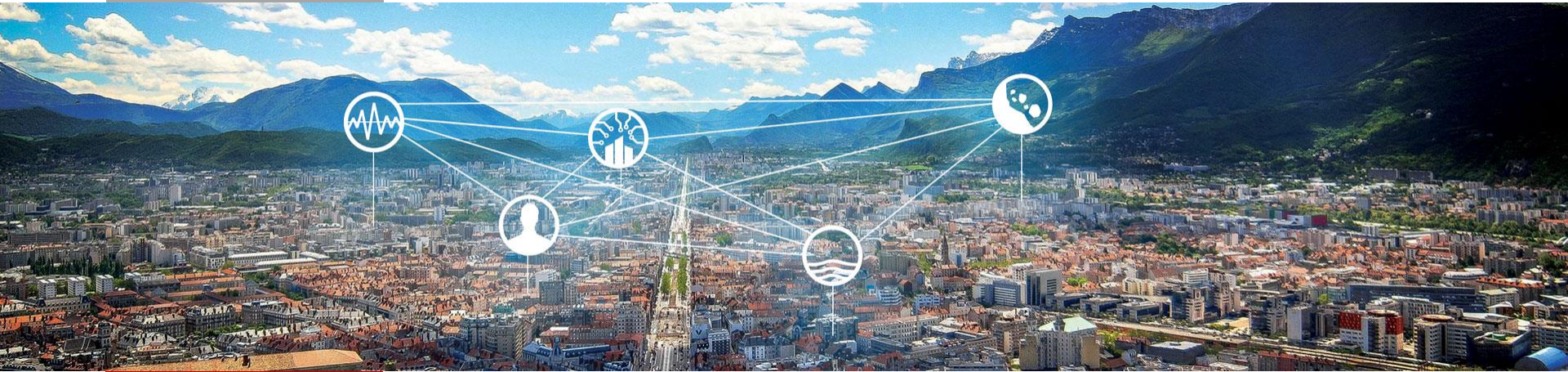




Risk
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PhD #T2: Coordination of action between heterogenous stakeholders in avalanche crisis management

Aurelie PEILLON

Sandrine Caroly (PACTE)

Yann Laurillau (LIG)

Didier Richard (INRAE)



financé par
IDEX Université Grenoble Alpes



THESIS OBJECTIVES

■ **Collective work: anticipate and manage avalanche situation**

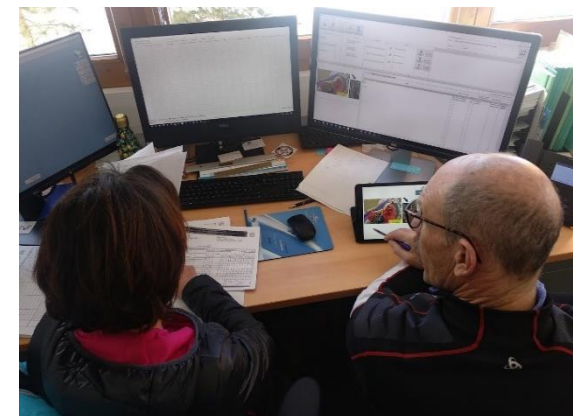
- ▶ Adaptation to variability and rapid change
- ▶ Coordination to achieve common goal
- ▶ Individual and collective strategies



■ **Software to help to manage avalanche situation**

- ▶ Capitalization of different information
- ▶ Dissemination of information
- ▶ Better coordination

→ **Cross-disciplinary approach:** Ergonomics and computer science



MAIN METHODOLOGICAL ACHIEVEMENTS

■ Interviews

- ▶ 1st year : 25 interviews with different professionals
- ▶ 2nd year : interviews of stakeholders in 2 ski resorts



■ Observations

- ▶ 2 ski resorts : 6 weeks and 4 weeks
- ▶ La Plagne & Les 7 Laux



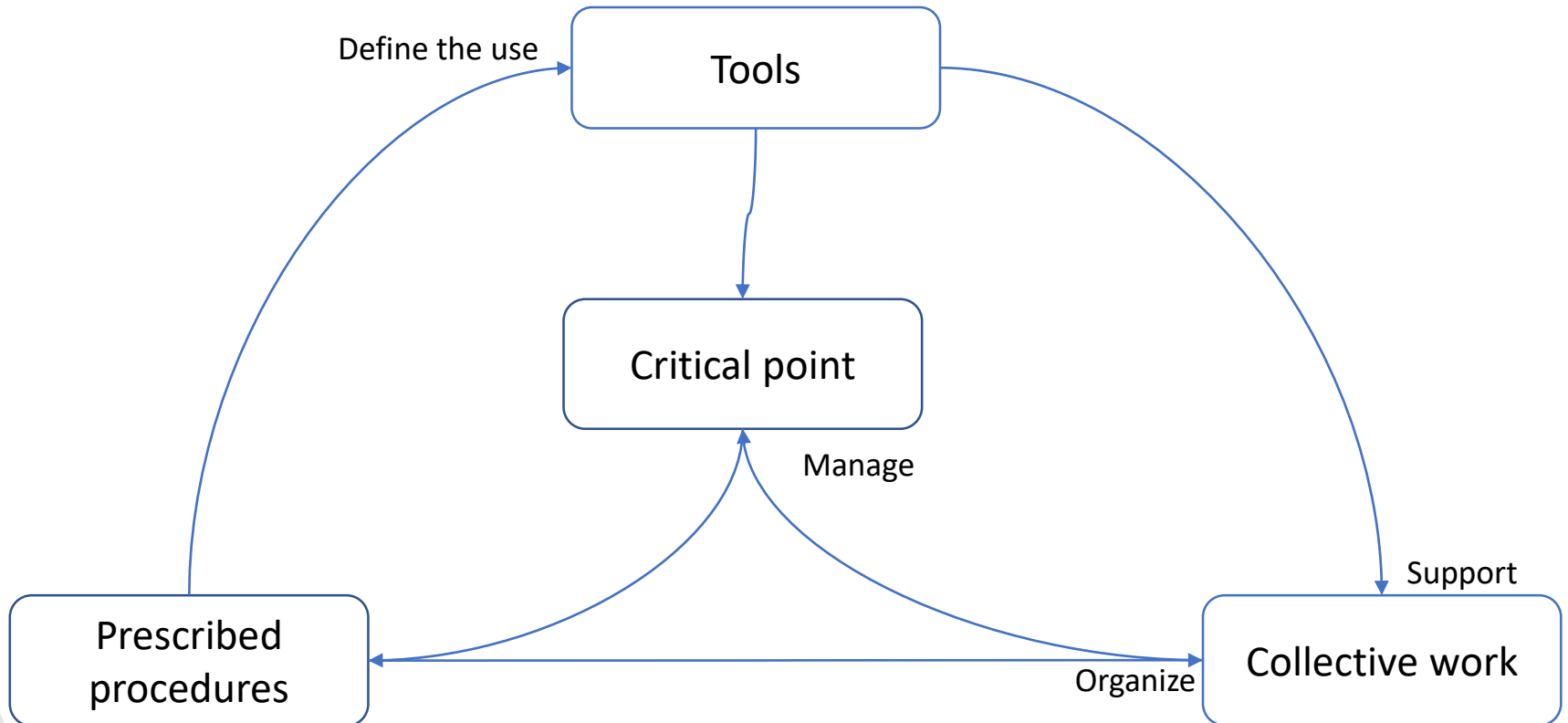
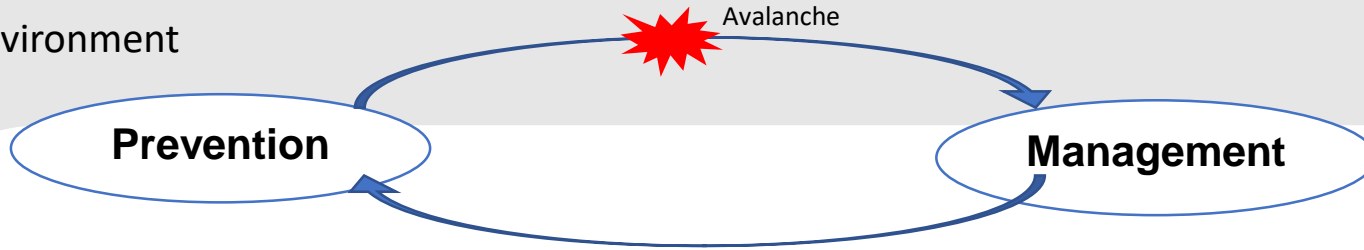
■ Exercise of avalanche rescue

- ▶ Films of the exercise
- ▶ “self-confrontation” interviews



Managing an avalanche crisis - Model

Dynamic environment

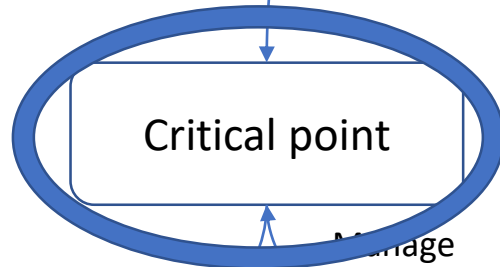


Managing an avalanche crisis - Model

Dynamic environment

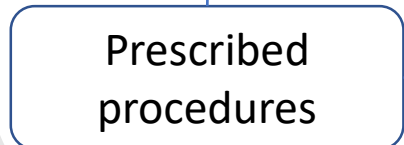


Define the use

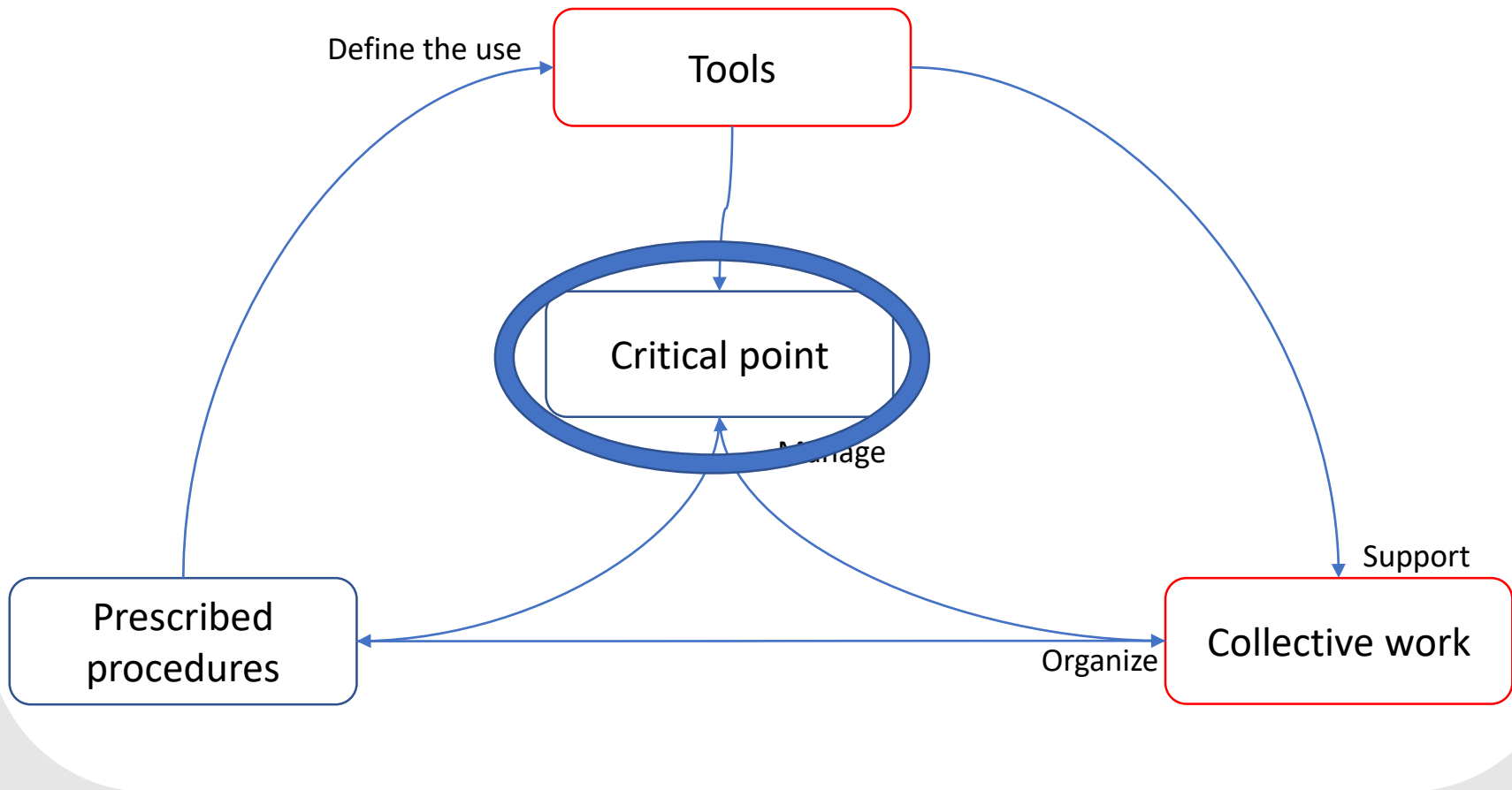
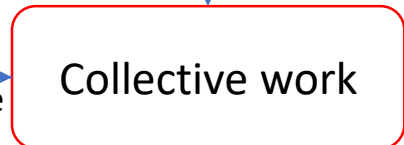


Manage

Support



Organize





MAIN RESULTS (1/3): CRITICAL POINT & CRISIS SITUATION

Information is missing	Victim is not found	Securing but avalanche	Uncontrolled media	Many avalanche	Coordination issues
Number of victims	Not enough resources available	Responsability of the ski resort	Information is uncontrolled	Stakeholders's fatigue	bad leadership
Errors in the alert	Snow characteristics	More snowfall than expected	A dramatization of events	High mental workload	Loss of information
State of victims	Degraded weather conditions	Snow accumulations	Reputation of the ski resort	Material and human resources are missing	Training is insufficient
	Lack of victim's equipment		Specific post is missing	Staff burnout	
	Extended schedule of the intervention				



MAIN RESULTS (1/3): CRITICAL POINT & CRISIS SITUATION

Victim is not found

Not enough resources available

Snow characteristics

Degraded weather conditions

Lack of victim's equipment

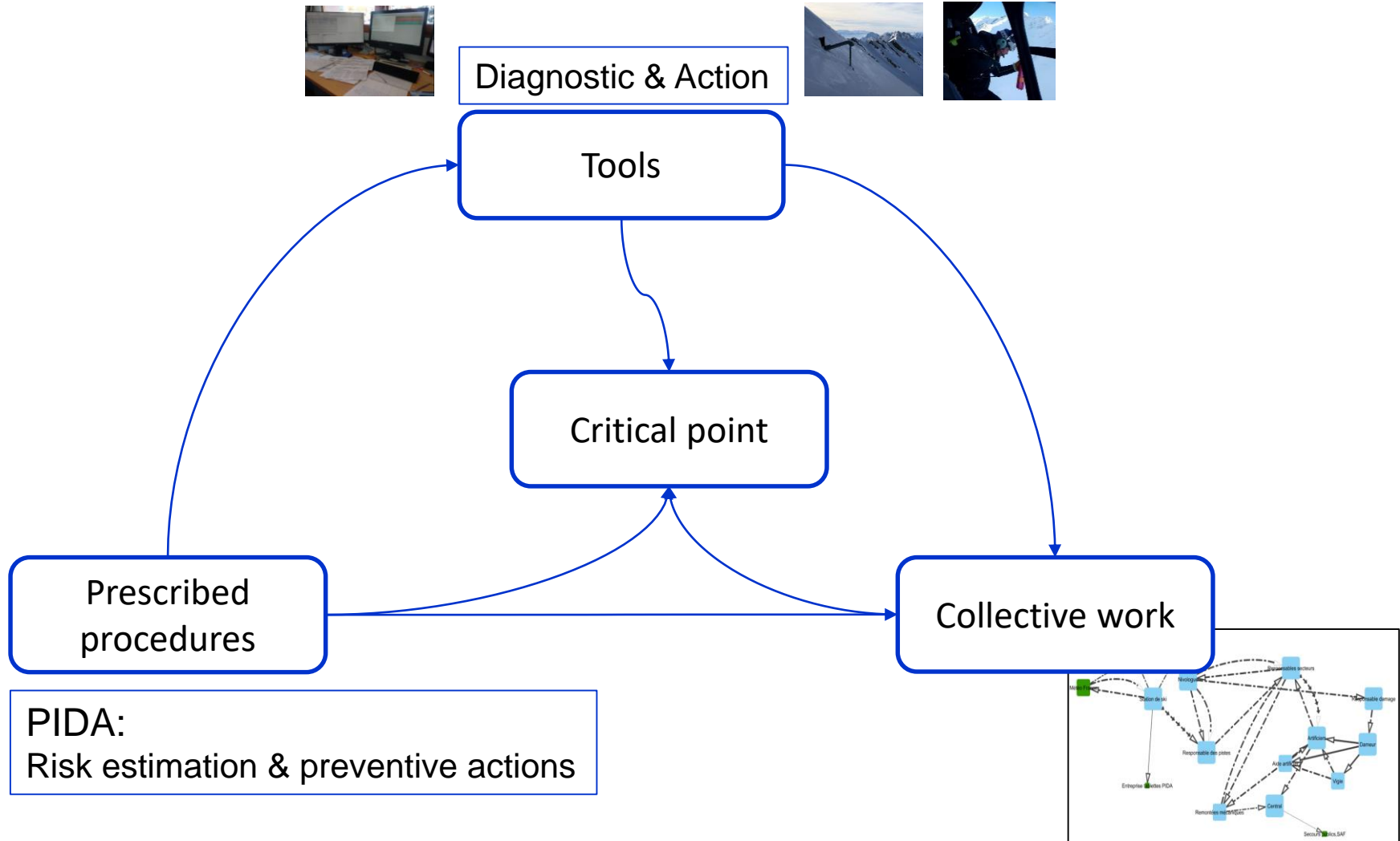
Extended schedule of the intervention



MAIN RESULTS (2/3): AVALANCHE CRISIS PREVENTION



Diagnostic & Action

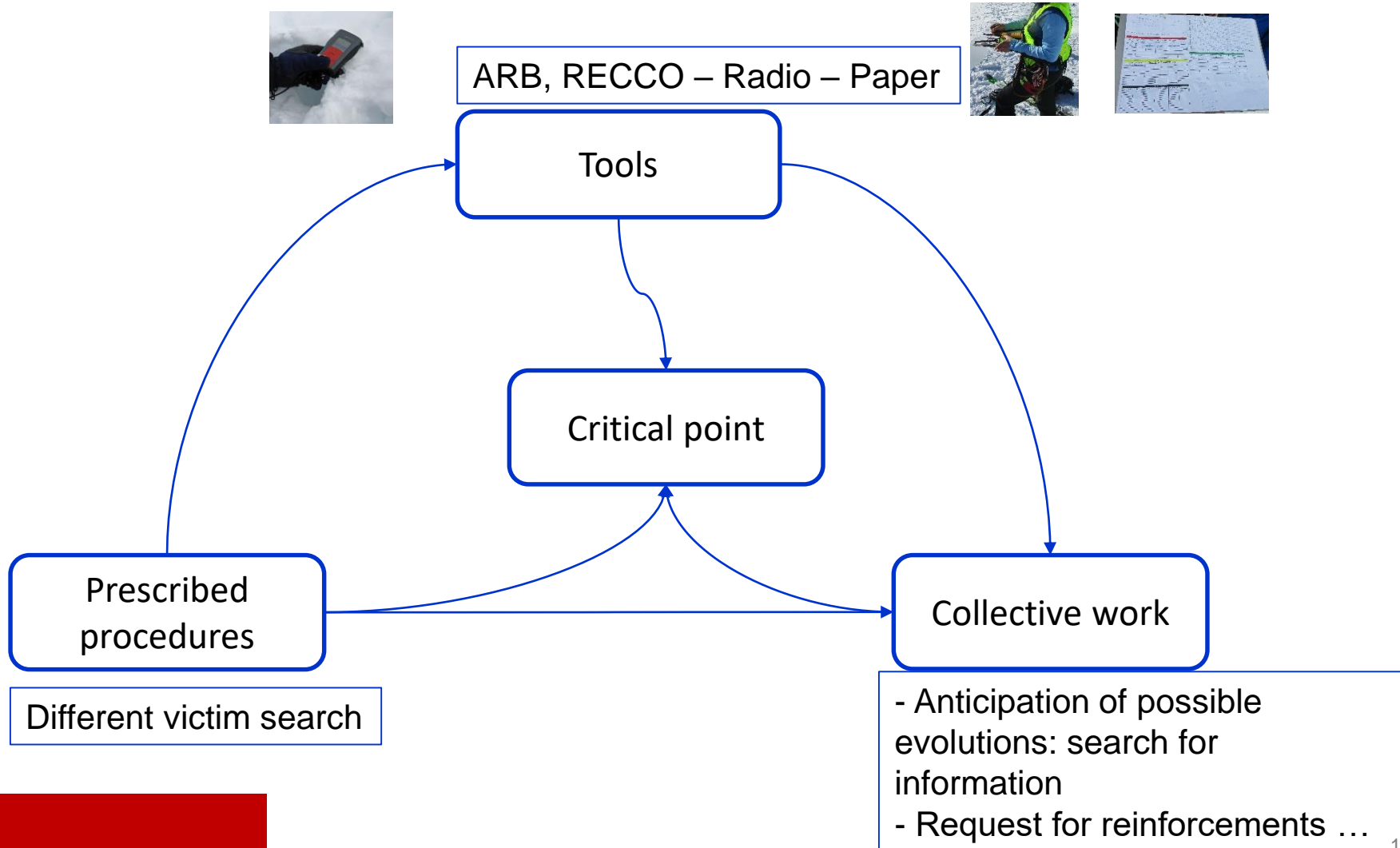
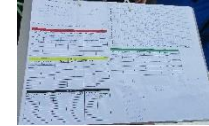




MAIN RESULTS (3/3): AVALANCHE CRISIS MANAGEMENT (WORK IN PROGRESS)



ARB, RECCO – Radio – Paper





PERSPECTIVES

■ **Research perspectives**

- ▶ From the critical point: modelization of the collective work and the use of the tools
- ▶ Improve the use of tools

■ **Reorientation of the thesis due to the COVID-19 pandemic, if any**

- ▶ Few weeks missing in 7 Laux
- ▶ Interviews or observations on specific times
- ▶ No request for extension

PRESENTATIONS

■ Conference

- Science Week 2019
- IDRIM 2019
- SELF 2020

■ Paper

- The Conversation
- IRMa

■ Scientific Animation

- Fête de la science 2019 & 2020 : Carte blanche aux doctorants
- Cascarisk 2019. Serious game : Tunnel du Chambon case
- Riskuers 2018-2019

■ Award

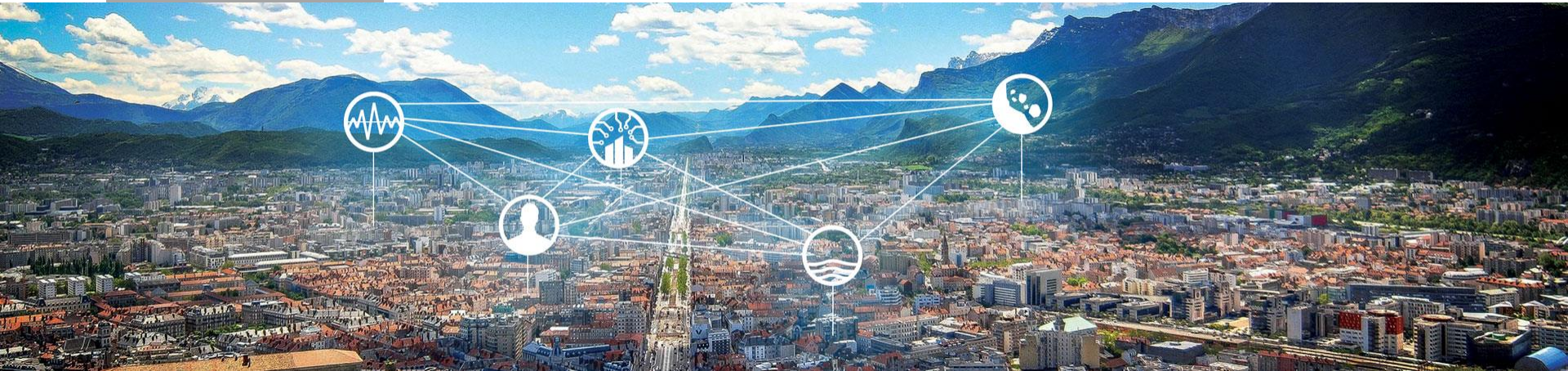
- Prix KERALIS





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