



RISK MANAGEMENT AND TAKING RESPONSIBILITY TO HALT RESCUE OPERATIONS

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RISK MANAGEMENT

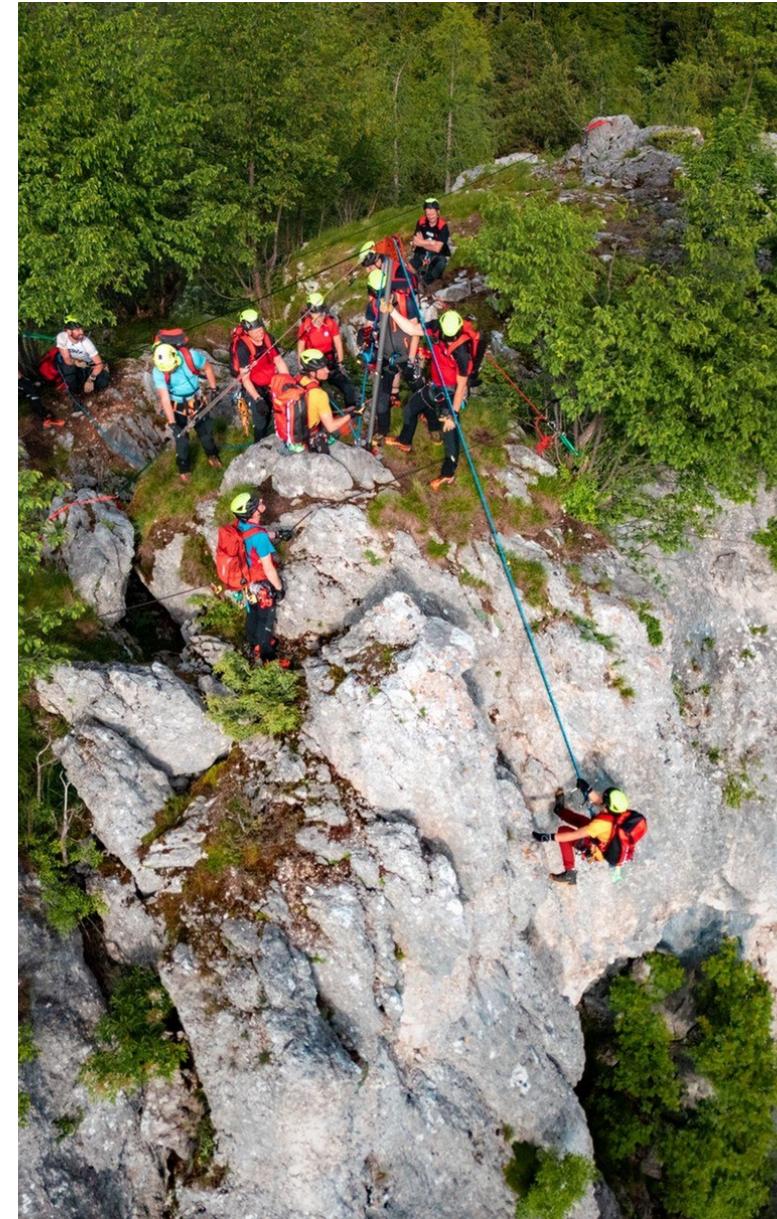
Mountain rescue is dangerous!

There have been seven fatalities among mountain rescuers in Slovenia in the last 30 years.

There are many factors that impact the risk level:

- training
- equipment
- experience
- organisation
- decision-making
- etc.

Of these, **decision-making** is one of the most unpredictable factors.



RISK MANAGEMENT

It is crucial to ensure that the right people are making decisions during the rescue mission.

There must be a proper procedure for determining who will make decisions during the mission.

At the Slovenian Mountain Rescue Association, we pay a lot of attention to this.

However, there are always some challenges we need to face, as will be presented in the four case studies later on.



GRZS

GRZS: 113 years old; 850 mountain rescuers, all volunteers; 18 regional teams

Regional team	Active rescuers per regional team, $\Sigma 600$	Number of missions in 2024, $\Sigma 629$
AJDOVŠČINA	27	21
BOHINJ	54	90
BOVEC	45	54
CELJE	34	30
JESENICE	23	13
JEZERSKO	26	10
KAMNIK	37	58
KOROŠKE	28	11
KRANJ	29	25
KRANJSKA GORA	31	36
LJUBLJANA	38	53
MARIBOR	24	11
MOJSTRANA	37	56
RADOVLJICA	34	44
RATEČE	23	9
ŠKOFJA LOKA	27	16
TOLMIN	50	61
TRŽIČ	33	31



EMERGENCY ACTIVATION FLOW

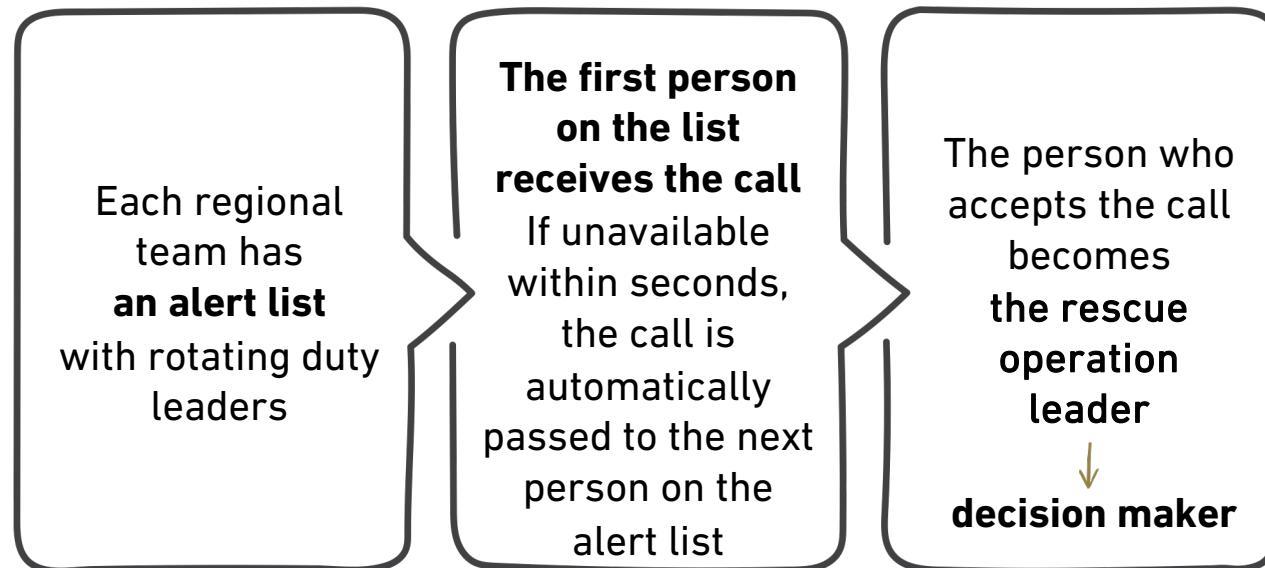
National
emergency
number
112

Emergency Call
Centre 112
activates the
**appropriate
service**
(firefighters,
urgent medical
centre, mountain
rescue, etc.)

In the event of an
accident in
mountainous or
remote terrain,
Centre 112 calls
**regional
mountain rescue
team
number**



ALERT SYSTEM WITHIN GRZS



ALERT LIST

Each regional team decides who will be on the alert list and in which order. This determines who will be in charge of the rescue operation.

REQUIREMENTS:

- **High level of experience** (often instructors)
- Completion of **official training for operation leaders**

Training organized by URSZR
(Administration of the Republic of Slovenia
for Civil Protection and Disaster Relief)



OPERATION LEADER

1. Small/simple operations →

The operation leader accompanies the rescue team to the accident site.

2. Large/complex operations →

The operation leader is based at the headquarters in the valley and coordinates several on-site teams. A leader is appointed for each on-site team.



DECISION-MAKING WHEN TO STOP THE RESCUE OPERATION

CLEAR CHAIN OF COMMAND

EXPERIENCE

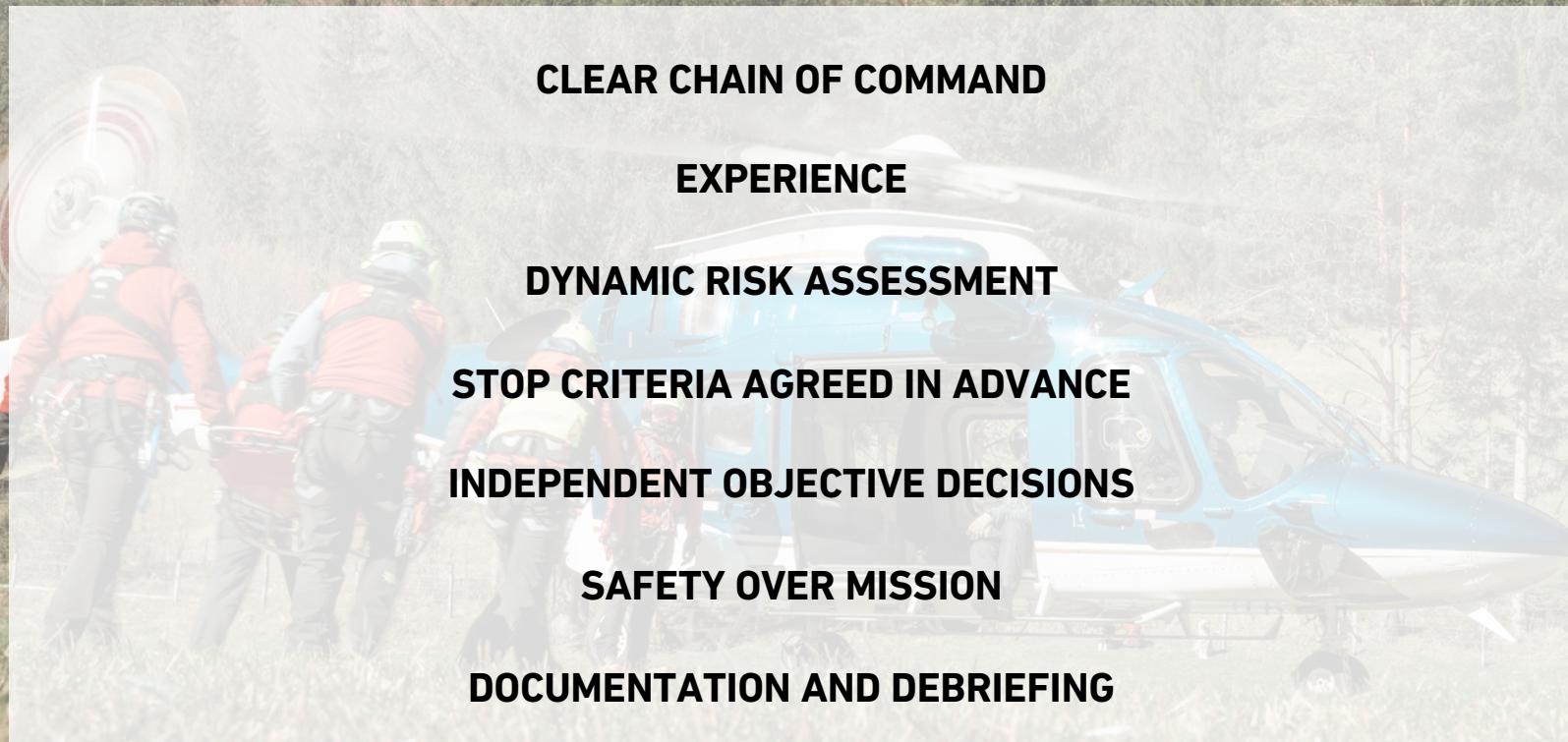
DYNAMIC RISK ASSESSMENT

STOP CRITERIA AGREED IN ADVANCE

INDEPENDENT OBJECTIVE DECISIONS

SAFETY OVER MISSION

DOCUMENTATION AND DEBRIEFING



ONE OF THE CRITICAL DECISION POINTS

Challenge of *shared* responsibility

- The operation leader **decides when to stop the operation** due to extreme risk
- When based at headquarters, the operation leader **relies on information** from the on-site team.
- The on-site leader may be **reluctant to stop the operation** and may underestimate the risk when reporting on the on-site situation (given the efforts made so far, the proximity to victims, the better micro-location conditions, the higher emotional pressure, someone else's responsibility. etc.)



CASE STUDY: CHRISTMAS 2024 LARGE RESCUE OPERATION

📍 Kotliška grapa, Kamnik-Savinja Alps

📅 22–26 Dec 2024

SITUATION: Two Hungarian **climbers trapped in severe winter storm** ~ 1800 m; multi-day search and rescue.

KEY CHALLENGES:

- Extreme weather: heavy snowfall, winds >100 km/h
- Avalanche risk, deep snow, limited visibility
- 100+ rescuers over five days; logistical strain
- Big pressure from the media, the general public, relatives, embassy, etc.



22 December 2024 - DAY 1

TIMELINE

- Heavy snowfall throughout the day; **strong snow and wind forecast** for the night
- **18h**: Emergency call received
- Woman **trapped in a steep gully, uninjured**
- Her partner fell further down, injured – both can hear each other
- **Exact location unknown**
- One team approaches from the north side, several teams from the south side of Kamnik Saddle (1900 m)
- **Goal** → to reach a bivouac higher up the mountain and locate the climbers at first light

DECISION POINT

- After 4 hours, the first team reached Kamnik Saddle
- Reported extreme avalanche danger and worsening weather
- Immediate retreat ordered for all teams
- The last rescuers returned to the valley shortly before midnight



23 December 2024 - DAY 2

TIMELINE

- Snowfall eased, strong wind grounded helicopters
- All-night contact with the woman; but the link with her partner was lost
- Location refined overnight
- Early morning: several teams resumed the ascent
- Lead team consisted of **experienced alpinists**
- **High avalanche danger**, exposed terrain
- Problem finding the micro-location
- Police helicopter confirmed the micro-location



23 December 2024 - DAY 2

TIMELINE

- The woman was **rescued and evacuated**; partner **still missing**
- Teams returned after dusk

DECISION POINT

- **Emotional pressure**: woman alive, time being critical
- The team could hear her but couldn't locate her
- Despite **the high risk**, operation **continued**
- The helicopter flight was in marginal conditions
- Self-evacuation attempt succeeded, allowing **a safer retreat**



24-25 December 2024 - DAY 3 & 4

TIMELINE

- Hurricane-force winds, deep snow drifts, **helicopter grounded**
- Ground teams attempted an approach but **retreated** due to the extreme danger
- **Aerial reconnaissance failed** because of strong turbulence

DECISION POINT

- **Risk to rescuers too high vs. chance of survival too low**
- **Public pressure** strong – weather seemed calm except for severe winds
- **Operation officially suspended** for safety reasons



26 December 2024 - DAY 5

TIMELINE

- **Wind subsided**, helicopter operations possible
- **The missing climber located** – deceased, buried under 2.3 m of snow

DECISION POINT

- **Conditions safe enough for flight**
- **Rescue team accessed** the gully directly



CASE STUDY: CHRISTMAS 2024 LARGE RESCUE OPERATION

CRITICAL DECISIONS

- **Teams withdrawn overnight** for safety reasons; continuous reassessment
- **Critical push** to save life
- **Helicopter assisting** ground team in locating the climber
- **Operations repeatedly halted** due to **life-threatening conditions**, despite huge pressure from the media, relatives, etc.
- **Final push only when the weather window opened**



CASE STUDY: KARST SHAFT ACCIDENT

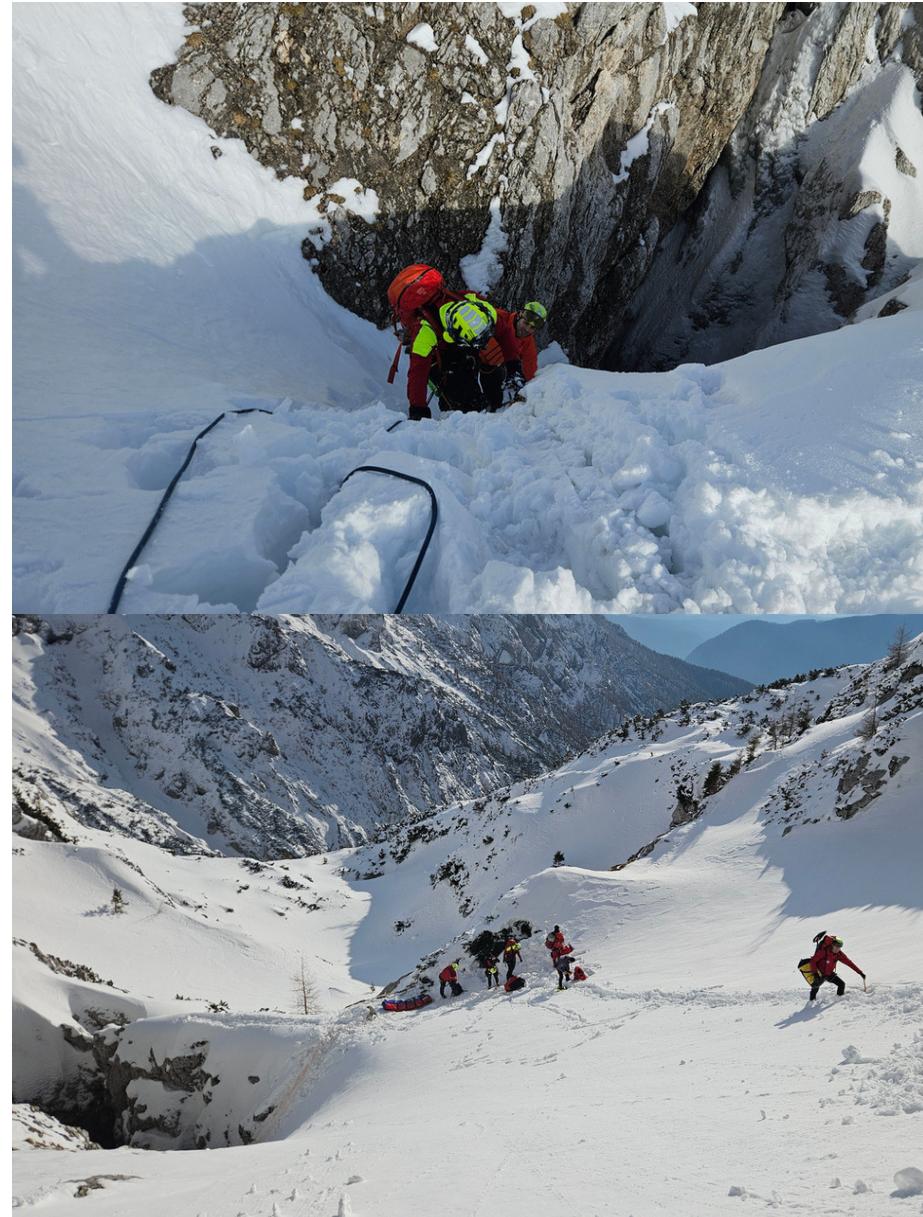
📍 Grintovec area, Preddvor, Slovenia

📅 March 2025

SITUATION: Hiker slipped at ~ 2000 m and fell ~150 m into a deep karst shaft

KEY CHALLENGES:

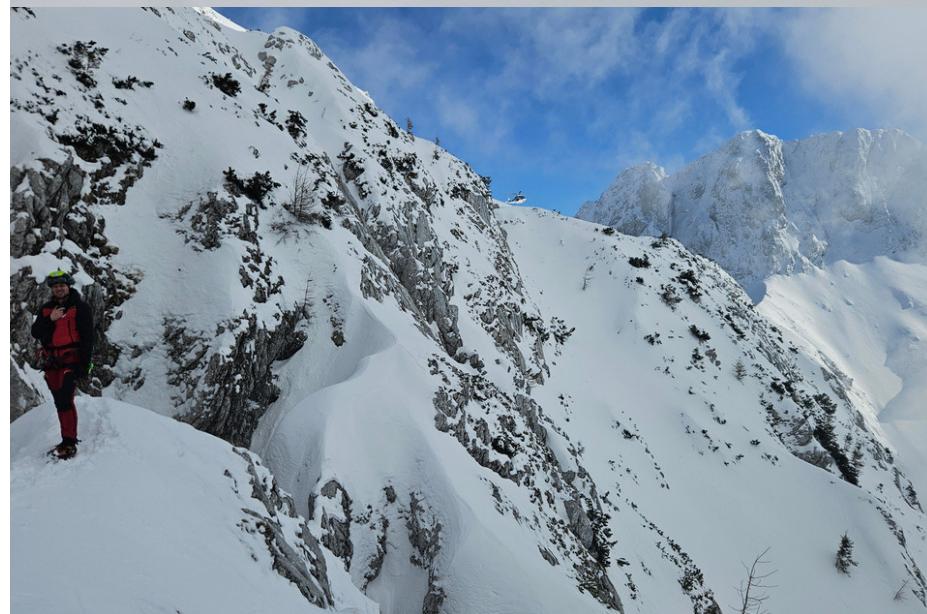
- Vertical drop >100 m requiring complex rope systems
- Remote alpine location, limited helicopter landing sites
- Emotional impact on victim's colleagues present at the site



CASE STUDY: KARST SHAFT ACCIDENT

CRITICAL DECISIONS:

- **Descending deep into the cave**, without cave rescue experience
- **Limited communication** between the rescuer and the operation leader
- **Recovering the deceased victim from the cave on the same day**



CASE STUDY: NIGHT-TIME HELICOPTER RESCUES

📍 Kokrska Kočna & Mangart

📅 April & June 2025

SITUATION: Two complex night-time operations

involving seriously injured climbers, requiring a combined ground and air response.

KEY CHALLENGES:

- Darkness, shifting weather, high-altitude turbulence
- Difficult terrain for stretcher transport and rope work
- Cross-border coordination in Mangart operation (Slovenia–Italy)



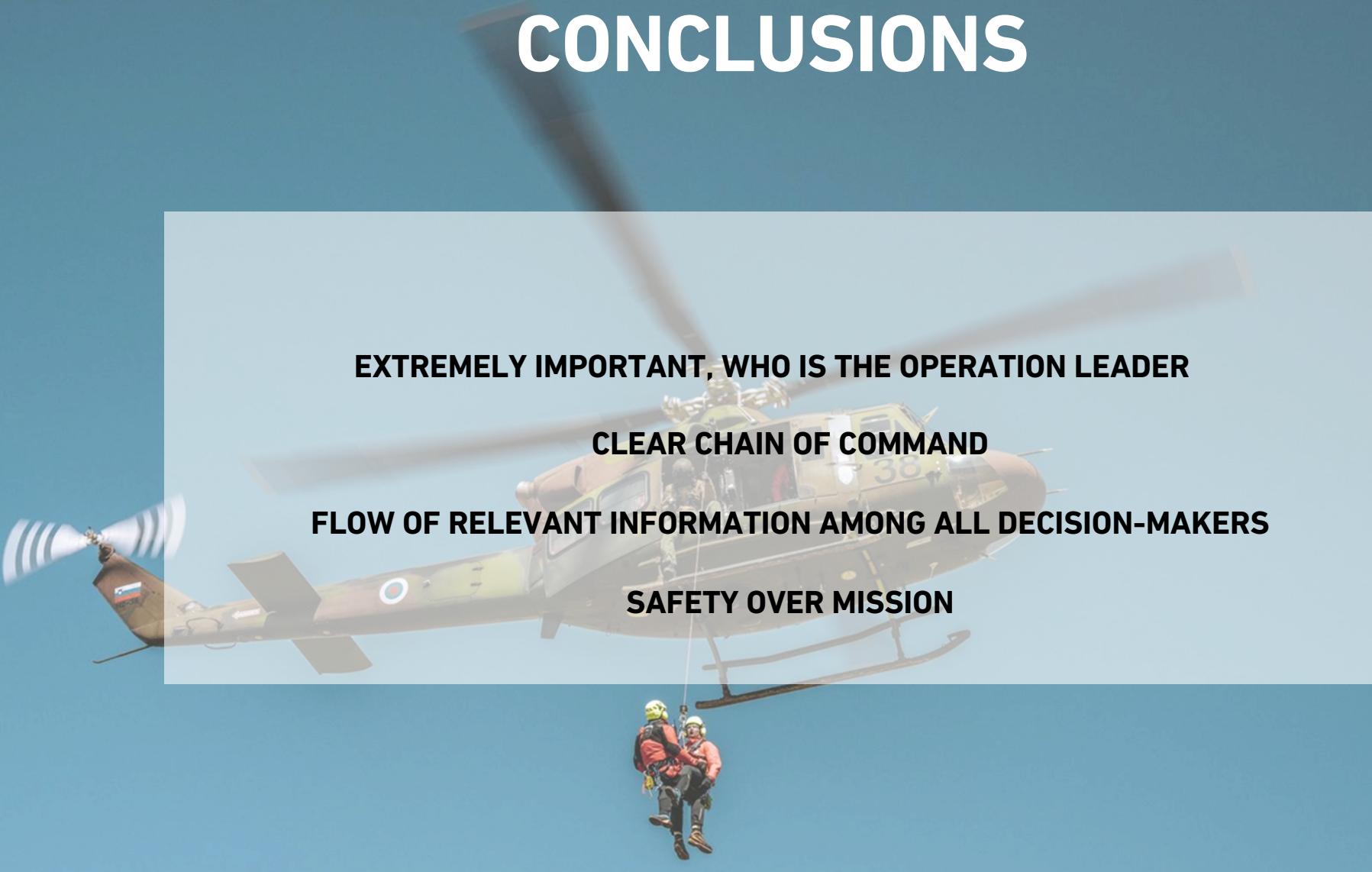
CASE STUDY: NIGHT-TIME HELICOPTER RESCUES

CRITICAL DECISIONS:

- **Activating a helicopter during the night** in difficult conditions
- **Multiple “go/no-go” calls** for helicopter insertion/extraction
- **Temporary retreat and re-attempt** when conditions improved
- Both casualties were **evacuated alive** after extended operations



CONCLUSIONS



EXTREMELY IMPORTANT, WHO IS THE OPERATION LEADER

CLEAR CHAIN OF COMMAND

FLOW OF RELEVANT INFORMATION AMONG ALL DECISION-MAKERS

SAFETY OVER MISSION



Q/A

THANK YOU



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