



PLAS Y BRENIN

NATIONAL OUTDOOR CENTRE

Avalanche Decision Making



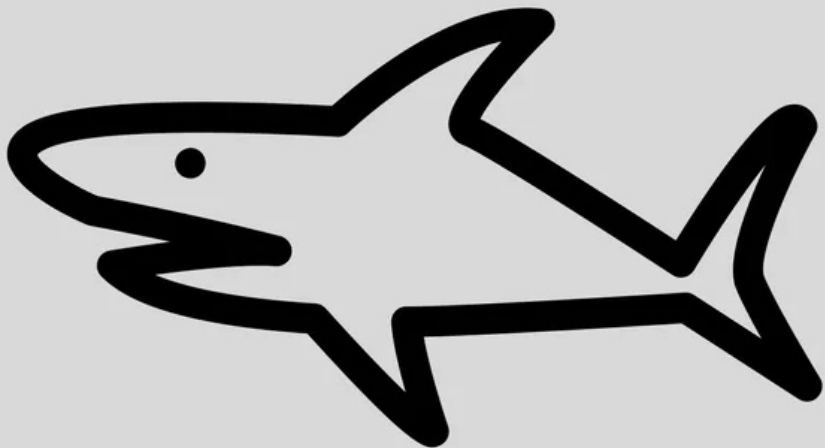
@jamesthacker
@mtnassurance



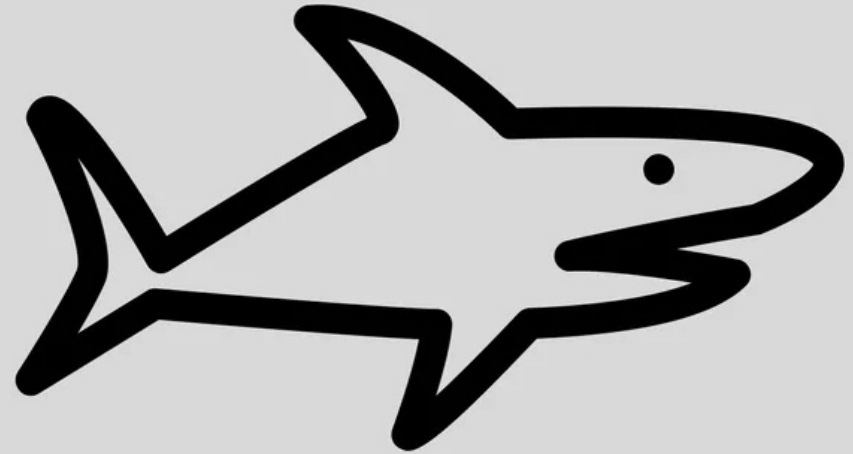


Hazard

Something that can potentially cause harm



Risk



= hazard + exposure

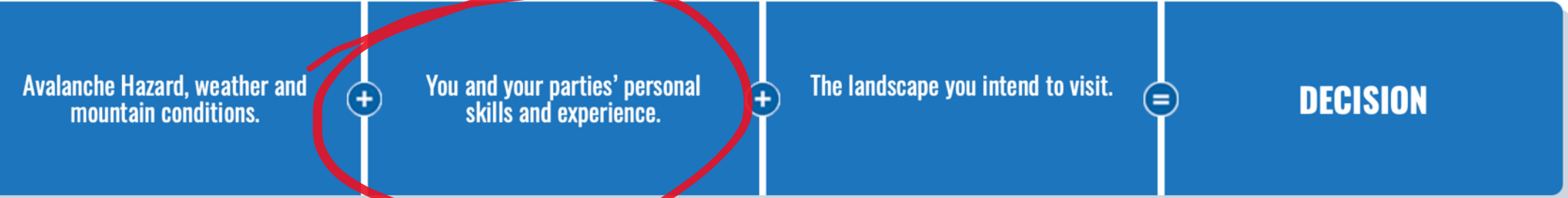
IDENTIFYING AVALANCHE HAZARD IN THE HILLS AND MOUNTAINS THROUGHOUT THE WINTER IS A CHALLENGING PROCESS.

Constantly changing weather factors, from temperature and snowfall to wind speed and direction, can affect the strength and stability of the snowpack. So it's vital to keep a close watch on conditions during the season - especially throughout any mountain excursions.

This guide outlines the decision-making process and the fundamental considerations of assessing avalanche hazards in the winter mountains. With the advice on these pages, together with the corresponding resources overleaf, you should be able to make better judgements on where and when to go.



When making any decision in the winter mountains always consider these 3 factors:





TALKING ABOUT...

- Some 'human factor' experiences
- Non-technical Skills
- Situational Awareness
- CASM – 4 things to think about
- Q & A

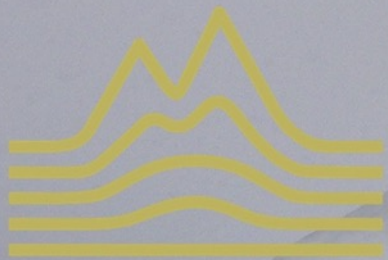
WHAT IS HF?

Definition: “Human factors and ergonomics (commonly referred to as human factors or HF) is the application of psychological and physiological principles to the engineering and design of products, processes, and systems”.

HF in the Mountains = anything related to Human Performance







MOUNTAIN
ASSURANCE

BEN NEVIS

- Experienced group/team
- Used technical skill to take on more risk?
- Risky Shift

...people do what makes sense to them at the time - otherwise they wouldn't be doing it. In other words people do not come to work to do a bad job.

Dekker, S. (2014) The field guide to understanding 'human error', CRC Press.





Ceillac

1 Les formes du chaos
2 Sombre Héros

3 Y de gauche
4 Y de droite






5 Easy Rider
6 Vermicelle










CEILLAC

- Stable weather, habit forming trend
- Decisions based on previous success
- Normalisation of Deviance

European Avalanche Danger Scale (2018/19)			
	Danger level	Icon	Snowpack stability
5	very high		The snowpack is poorly bonded and largely unstable in general.
4	high		The snowpack is poorly bonded on most steep slopes*.
3	considerable		The snowpack is moderately to poorly bonded on many steep slopes*.
2	moderate		The snowpack is only moderately well bonded on some steep slopes*; otherwise well bonded in general.
1	low		The snowpack is well bonded and stable in general.

**Normalisation
of Deviance**

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Drift !!

Norm – No hazard = “safe” climbing

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Approx line of descent

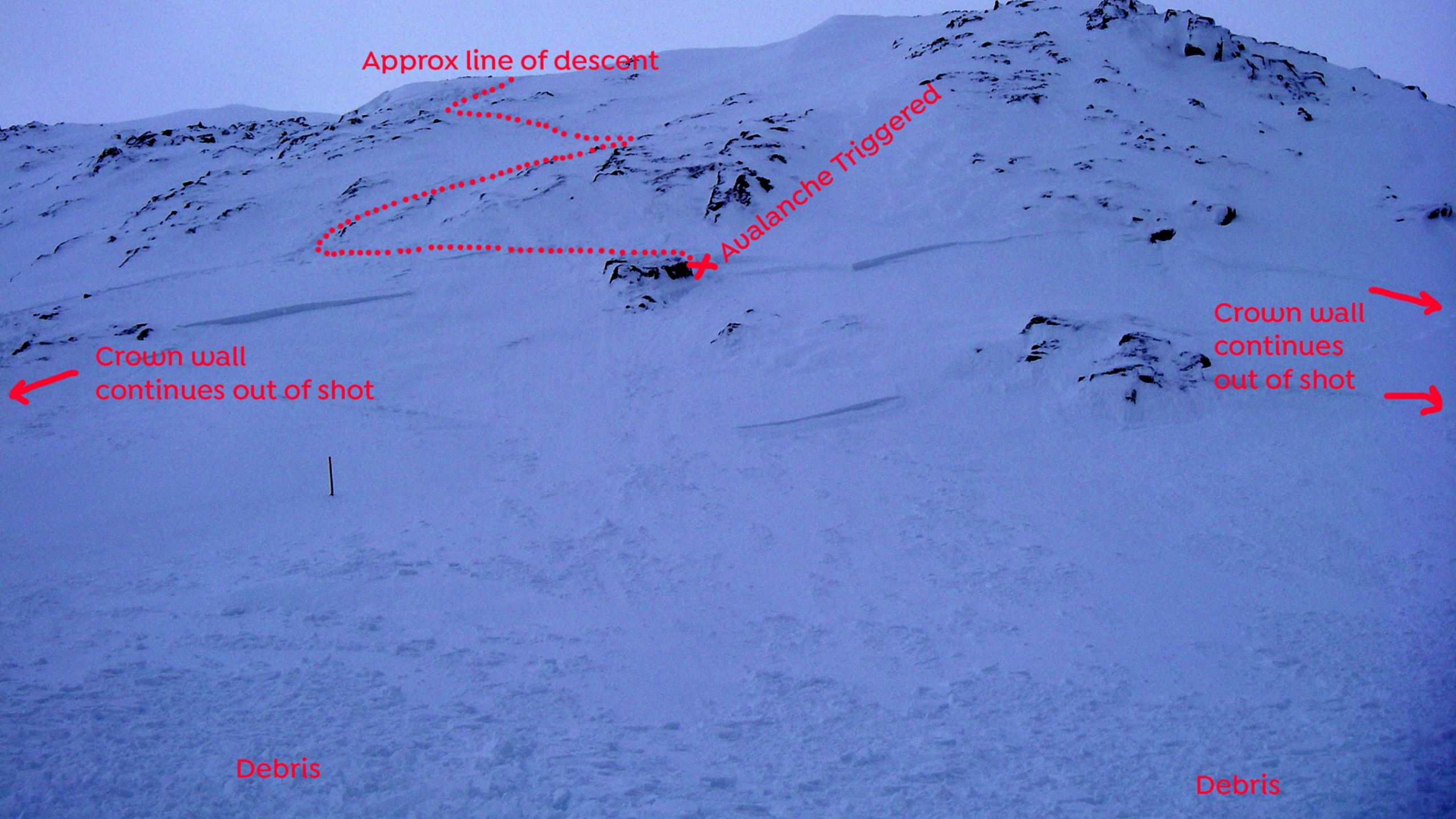
Avalanche Triggered

Crown wall continues out of shot

Crown wall continues out of shot

Debris

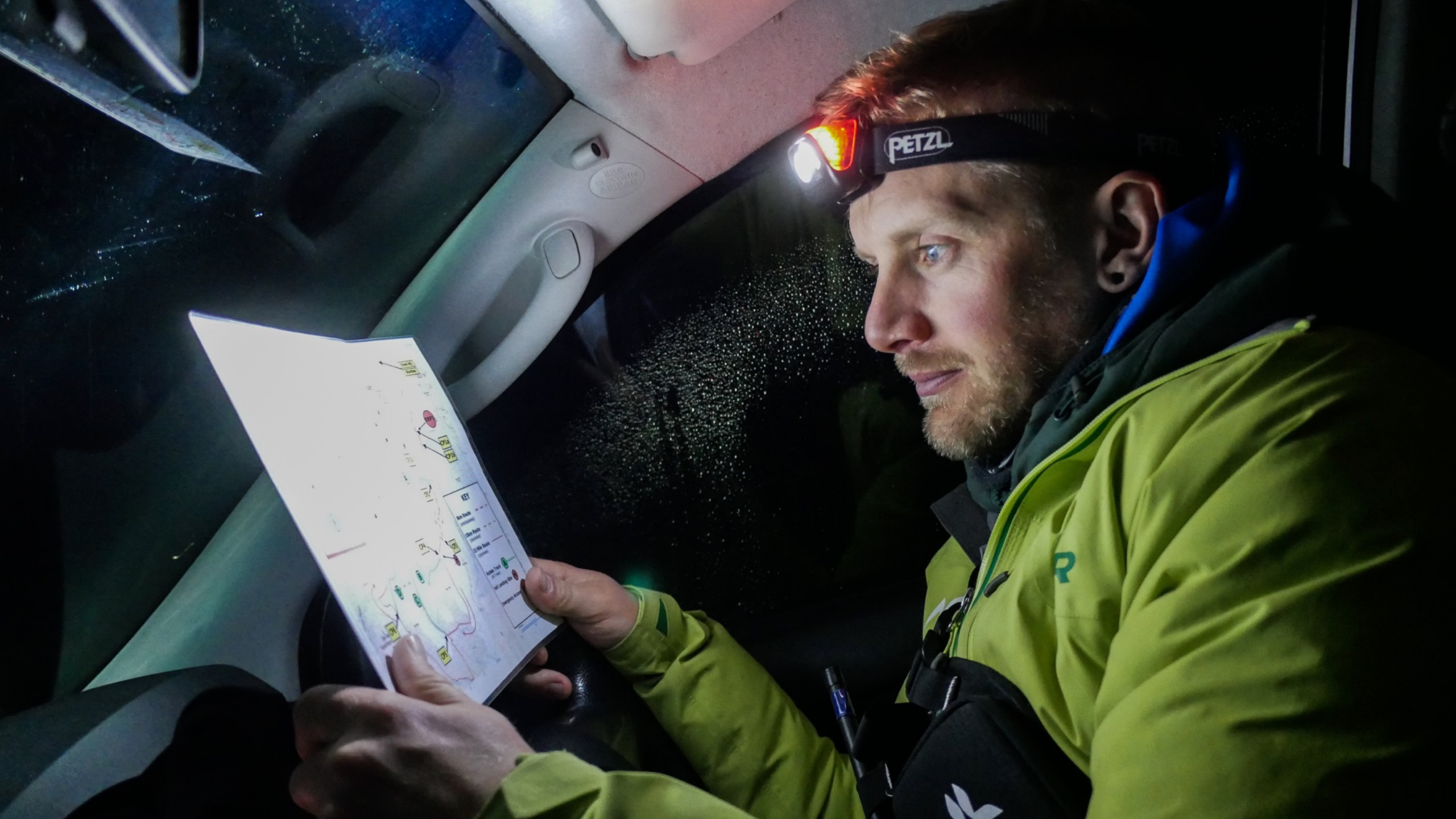
Debris





AONACH MOR

- Multi tasking
- Bad weather is normal in Scotland
- Distraction
- Attentional Narrowing



PETZL





NON-TECHNICAL SKILLS

- Need to consider range of skills for optimum performance.
- ...technical skills to do the role or task, combined **non-technical skills** to achieve a specific result.

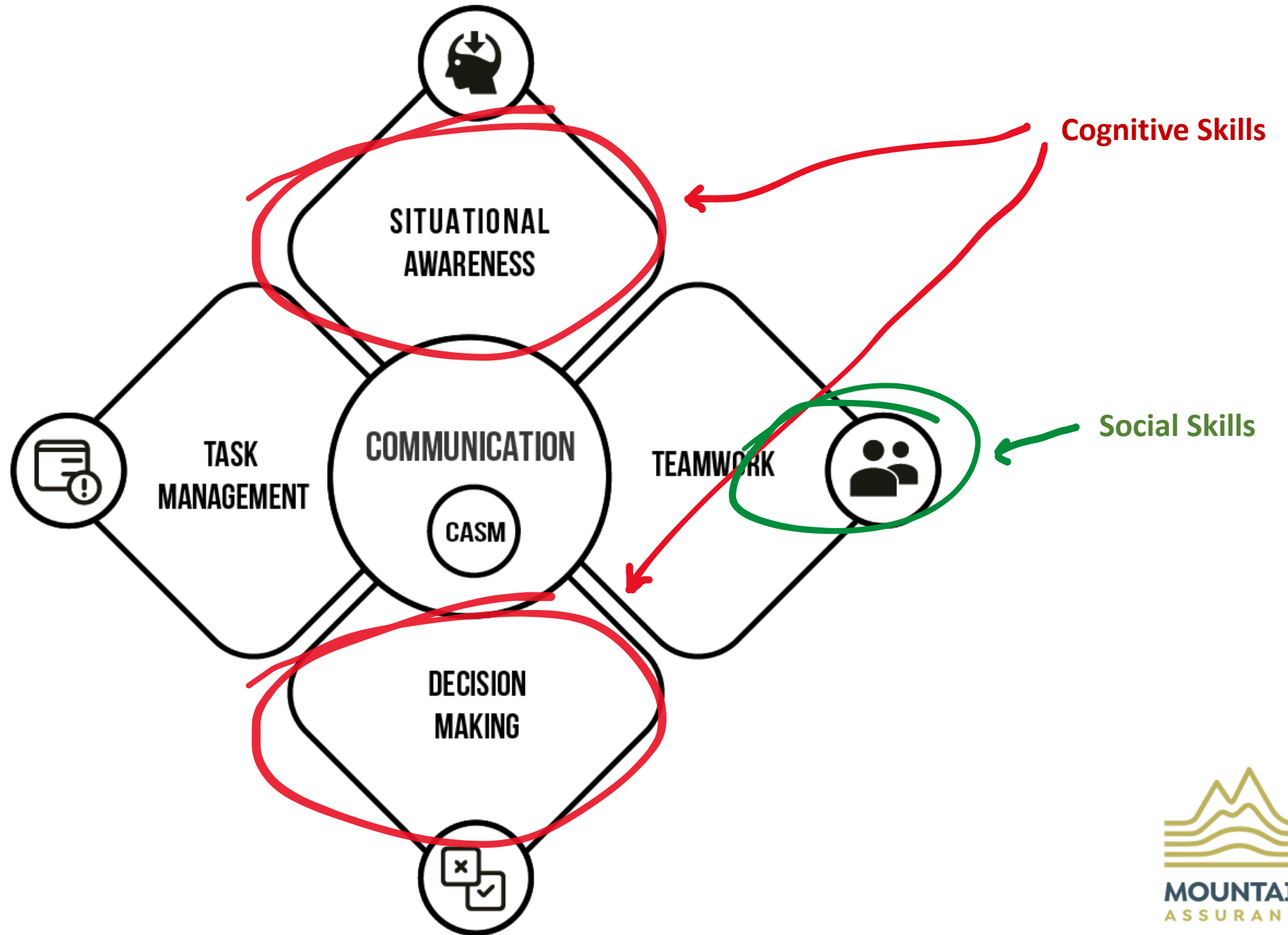
SAFETY
AT
SHARP EN

A Guide to Non-Technical Skills

RHONA FLIN
PAUL O'CONNOR
MARGARET CRICHTON



JÖTTNAR



A photograph of a snowy mountain slope. In the upper left, a group of people is visible on the ridge. A single skier is seen further down the slope, leaving a trail in the snow. The sky is clear and blue.

SITUATIONAL AWARENESS

- Important concept in dynamic environments
- Three levels – Perception, Understanding, Thinking Ahead
- But what degrades Situational Awareness?



TWOC's

- Fatigue
- Distraction
- Stress
- High Workload
- Poor Mental Model
- Elements / Environmental
- Food / Fuel

CASM v3.0

- CASM – 4 things to think about
- Mix of NTS

<https://mountainassurance.co.uk/casm-v3-0/>



Communicate

Establish and maintain lines of communication
// “Say what you see”



Alter Command Gradient

Flatten hierarchy as the leader of the group
// “Disavow perfection”



Situational Awareness

**Strive to achieve a shared mental model for the day
// “Anticipate what may happen next”**



Minimise Distraction

**Focus on tasks and decisions that enhance safety
// Establish a “sterile cockpit”**

CASM u3.0 <https://mountainassurance.co.uk/casm-u3-0/>



Q & A



Thanks for listening

Video: Gavin Carruthers. Images: James Thacker, British Mountain Guides, University of Aberdeen



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@MtnAssurance

