Mountain Safety Knowledgebase

Plenary Session ICAR 2016
ICAR STATUTES (Extract)

2. Purpose/Tasks

2.1 ICAR works as worldwide open platform for the exchange of mountain rescue knowledge.
ICAR in the past and today

• Founded 1948

ICAR 2015

ICAR 2016

87 member organizations in 35 countries worldwide.
Topics Covered by the Mountain Safety Knowledgebase

- Safety, accident prevention and rescue in rock climbing
- Safety, accident prevention and rescue in ice climbing
- Safety, accident prevention and rescue in glacier travel
- Safety, accident prevention and rescue in canyons
- Safety, accident prevention and rescue in avalanche terrain
- Safety, accident prevention and rescue in cold environments
- Safety, accident prevention and rescue in caves
- Safety and accident prevention in alpine air rescue
- Mountain emergency medicine
Mountain Safety Knowledgebase

Knowledge
- System A
- System B
- System C
- System D
- System E
- System F
- System G
- Technique 1
- Technique 2
- Technique 3
- Technique 4
- Technique 5
- Technique 6
- Strategy I
- Strategy II
- Strategy III
- Strategy IV
- Strategy V
- Strategy VI
- Method A
- Method B
- Method C
- Method D
- Method E
- Method F
- Method G

Curriculum
- Strategy II
- Technique 1
- System B
- Method C
- Technique 5
- Simulation
- Leader in ABC Module “A” – 12,5 hrs
- Theory 15min
- Practice 40min
- Theory 60min
- Practice 120min
- Theory 90min
- Practice 120min
- Theory 25min
- Practice 45min
- Application 180min
- Discussion 30min

Standards
- Possible to Nation and Organization Specific Diploma “Leader in ABC”
- Multiple choice test “Leader in ABC”: at least 85 points...
- Practical testing: Technique 1+5: at least 70% based on performance scale...
- Physical fitness: Perform at least x within y time...
- Technical ability: Master difficulty A without a fall over x time or Y distance...
Mountain Safety Knowledgebase

Alpine Emergency Medicine

Safety, Accident Prevention and Rescue in Avalanche Terrain

Glacier Travel

Avalanche Rescue

Avalanche Prevention

Search

- Recco
- Transceiver
- Probe
- Avalanche dog
- GSM and additional means
- Helicopter based searches

Special procedures for:
- Deep burials
- Multiple burials

Excavation

- User group specific procedures
- Dimensions of excavation site
- Adaptations based on burial depth and availability of resources
- Procedure without probe hit
- Heavily contaminated debris
- Position probing

Accident Site Management

- Communication
- Risk-Benefit
- Accident site commander
- Functions in organized rescue
- UAvSAR
- Rescue on roads and railroads
- Specialty equipment
- Survival chance optimization

(Simplified sample of the database structure
Concept draft V 0.9, Manuel Genswein
September 2016, all rights reserved)
**Instruction Text:**

Probing master is not required, at this stage it is often more efficient to use a rescuer in the middle of the probe line as improvised probe master.

The probing depth in the first passage is an optimization between:
- "area search speed" (m²/rescuer/min)
- "likelihood of survival / burial depth"
- "percentage of buried subjects / burial depth"

After the first unsuccessful passage in coarse probing, apply it a second time.

A systematic offset of 25 cm (1/2 grid width) is very difficult to maintain.

The offset of the grid for the second passage is more efficiently introduced by lining up the rescuers in another position in the probe line.

Every rescuer has a slightly different probing pattern which leads to a randomized probing pattern.

After a second unsuccessful application of coarse search, apply fine probing.

This must be done with a probe master and very strict marking.

Combine the search with dog teams as soon as possible: The scent cone has a better probability to reach the surface due to the perforation.

After fine probing in a strict manner, removal of the probed layers (1 m safety margin to the unprobed debris) with a snow groomer should be considered.

**Instruction Video:**

**Scientific Paper:**
Slalom Probing ISSW 2014 Genswein et al

**ICAR Recommendation:**
AVA REC0011

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Simplified sample of the database structure. Sample for one coarse probe line technique. Concept draft V 0.9, Manuel Genswein September 2016, all rights reserved
Demo Case “Avalanche Rescue”

• Development of a standard proposal over 23 years
• Since 2010 official national standard in Switzerland
• Since 2014 ICAR consensus workgroup “Best Practice in Avalanche Rescue”
• 2016 consensus conference with 15 most important ICAR countries
• 174 illustrations with key instructional text in 13 languages
• Database of 2262 “puzzle parts” able to cover all user groups and application cases
(Simplified sample of the database structure. Concept draft V 0.9, Manuel Genswein September 2016, all rights reserved)
Some Print Screens as Example

(Simplified sample of the database structure. Concept draft V 0.9, Manuel Genswein September 2016, all rights reserved)
Backup / Verification

Probe Line

Leader

Forward

COMMANDS:
1: «probe»
2: «forward»

As required:
«align left to right»

Always align backwards, never forwards!

Align left to right!
Some Print Screens as Example

(Simplified sample of the database structure. Concept draft V 0.9, Manuel Genswein September 2016, all rights reserved)
As required: "align left to right"  
Positions: 

Always align backwards, never forwards!
Some Print Screens as Example

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Mountain Safety Knowledgebase

- Collect existing systems, techniques, strategies and methods from individual and groups of authors
- Standardize and harmonize content in subject matter expert consensus workgroups
Members and Delegates of Workgroups of the Mountain Safety Knowledgebase

**Individual workgroup member selection criteria:**
Workgroup members are exclusively selected based on qualifications for the task, professionalism, experience and essential language skills. Hierarchical position or function in their member organizations does not overrule the above mentioned criteria.

**Overall workgroup member selection criteria:**
- Appropriate representations of the “Mountain Safety Knowledgebase” member organizations
- Appropriate representations of the various user groups
- Appropriate representations of the different application environments
- Appropriate representation of the different geographical area

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**Workgroup**

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**ICAR**
- Avalanche Rescue Commission
  - Dog Handler Sub Commission
- Terrestrial Rescue Commission
- Air Rescue Commission
- Alpine Emergency Medicine Commission
- Prevention Workgroup

**IFMGA**
- Technical commission
  - High Altitude Mountaineering Sub Commission
  - Canyoning Sub Commission
  - Risk Management Sub Commission
  - Rope Access Sub Commission

**UIAA**
- Independent members
  - Selected based on qualifications for the purpose to reach the goals of the workgroup
  - Access Commission
  - Medical Commission
  - Mountain Protection Commission
  - Mountaineering Commission
  - Safety Commission
  - Youth Commission
  - Ice Climbing Commission
  - Anti Doping Commission
Mountain Safety Knowledgebase
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[Image of people climbing a snowy slope with equipment]
Demo Case “Avalanche Rescue”

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• 2016 consensus conference with 15 most important ICAR countries
• 174 illustrations with key instructional text in 13 languages
• Database of 2262 “puzzle parts” able to cover all user groups and application cases
• + 4 Languages in ICAR 2016 = total 17!
Mountain Safety Knowledgebase

Initiative / Proposal right

Every organization or individual...

- May propose modifications, optimizations and additions to the material in the Mountain Safety Knowledgebase. Proposals will be carefully evaluated by the topic-specific workgroup of the Mountain Safety Knowledgebase. After an addition or optimization has been accepted and implemented, all users of the Mountain Safety Knowledgebase will have access to it.

As the Mountain Safety Knowledgebase is not based on voluntarism, everyone, independently of their socioeconomic background, has an equal chance to become a contributor.
Mountain Safety Knowledgebase

- Store the data in a common database
- Make data available for an affordable price
- Invest revenue in the future development of mountain safety knowhow
Mountain Safety Knowledgebase

Strategic Committee
(One delegate of each member organization + additional delegates)

Technical Committee
(All topic-specific workgroup leaders)

Managing Director Mountain Safety Knowledgebase

Topic-Specific Workgroups
- Avalanche Rescue
- Crevasse Rescue
- Via Ferrata
- Rock Climbing
- ...

Art-Work and Database Coordinator of the Mountain Safety Knowledgebase
Mountain Safety Knowledgebase

- Professionalism
- Sustainability
- Standardization
- Truly global cooperation between all players
Mountain Safety Knowledgebase

A project of ICAR, IFMGA, UIMLA

in collaboration with UIAA

Scientific partners:
ENSA and SLF
Mountain Safety Knowledgebase
Plenary Session ICAR 2016
Current Situation

• Large Variety of Systems, Techniques, Methods and Strategies for the Same Purpose

• Inefficient Use of Resources

• Missing Compatibility
Economic Situation

- Increasing complexity and demand for resources of research and development projects
- Decreasing availability of resources based on voluntarism
- Research and development is a full time, professional activity
- Project goals have life-saving, but not a economic effect
- No return of investment from those who take advantage of the intellectual property created by the authors

Unsustainable Business Models for Authors
Demo Case “Avalanche Rescue”

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**RICERCA SOMMARIA**

1. Primo segnale:
   - Ottimizzazione definitiva della direzione di scansione e dell’orientamento reciproco Antenna vs Riflettore (angolo di Rotazione)
   - Interrumpere il movimento di rotazione
   - Fissare un riferimento visivo

2. Avanzare verso il soggetto sepolto:
   - Verificare la direzione di ricerca durante l’avvicinamento (movimento di scansione)

3. Quando il segnale si interrompe improvvisamente, eseguire l’ultima scansione (tutela da errori nella direzione di ricerca)

**PLUSIEURS SAUVETEURS PENDANT LA RECHERCHE FINE + RECHERCHE DU POINT**

Profondeur d’ensevelissement:
- normale → x ~ 1 m
- profonde → x = 1.5-2 m

**GRUNDLAGGAND V-GRÄVNING**
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Worldwide agreed «best practice» consensus «UIAA – IFMGA – ICAR»
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  - Safety Commission
  - Youth Commission
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  - Anti Doping Commission
Subscriptions and Commercial Licenses for the Mountain Safety Knowledgebase

**Commercial license**

A commercial license is required:
- If content of the Mountain Safety Knowledgebase is used in any format as part of publications which get sold
- For any item of the Mountain Safety Knowledgebase for complementary course materials (quick reference chats, safety brochures, booklets etc) of commercial services and courses which exceeds 30 items of the per course and topic.

Reselling items of the Mountain Safety Knowledgebase without adding additional content or making it available as a service which is not part of an additional training or consulting services is not permitted.

**Annual subscription**

Access to the entire database based on a license contract.

Unlimited use for non-commercial publications.

Commercial use limited to complementary participant hand-outs up to 30 items per course and per topic of the Mountain Safety Knowledgebase.
Fair Allocation of the Revenue of Subscriptions and Commercial Licenses

- **Author/developer/Org. account**
  - Provided by author
  - 60% Amortization fee for R&D (*1) of systems, techniques, algorithms, methods etc

- **Knowledgebase account**
  - Provided by workgroup
  - 30% Amortization fee for final art-work, videography (*1, *3) etc

- **Workgroup account**
  - 5% Amortization fee for Knowledgebase
  - 5% Amortization fee for Workgroup

- **Workgroup accounts other topics**
  - 50% Amortization fee for Workgroups in % of amount of items available in the database

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**Commercial license**

- Annual, including updates:
  - By item (*2)
  - By topic
  - For the entire database

- Onetime, lifetime:
  - By item (*2)
  - By topic

**Annual subscription**

- Access to the entire database based on a license contract

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(*1) Amortization fees for R&D and art-work/videography may be split between the original, individual author and the workgroup, respectively multiple authors and the workgroup. This may apply when the original work is over time optimized and further developed by the workgroup.

(*2) Particularly resource intense items may count as more than one unit.

(*3) If an author or organization only provides illustrations, videos etc, no R&D amortization fee will be paid.
Author and Workgroup Account

Author account

Available for the work time of the author/developer/group of authors acting in common to cover: expenses, and other resources for R&D projects, art-work and videography provided by the author (internal and external costs). Project and materials must be compliant to the requirements of the Mountain Safety Knowledgebase.

Worktime of the author(s) is compensated according to the daily rate of a national level instructor of the national mountain guide association of the country of residence of the author (fair adaptation to costs of living).

Money in the individual author’s account which does not get spent within 5 years expires. In this case, 1/3 of the amount of the expired year is paid out to the author and the remaining 2/3 are transferred to the workgroup account.

Workgroup account

Available for the work time of the workgroup leader and the workgroup members, expenses, and other resources for R&D projects, art-work and videography developed by the workgroup or individual members of the workgroup (internal and external costs). Translations and glossary projects (internal and external costs) (*1). Project and materials must be compliant to the requirements of the Mountain Safety Knowledgebase.

Worktime of the workgroup leader and the workgroup member is equal and compensated according to the daily rate of a national level instructor of the national mountain guide association of the country of residence of the workgroup leader/member (fair adaptation to costs of living).

If a workgroup member is delegated in a paid position and his employer or contractor does not claim the money for the worktime, it will remain in the workgroup account. This rule does not apply if the delegated individual was forced to accept a volunteer position against his will and in an unfair manner based on his/her economic background.

(*1) Translations, terminology standardization and glossary efforts are considered a general interest and responsibility of the Mountain Safety Knowledgebase and thus are a workgroup effort paid by the workgroup account.
Give and Take for Subscribers and Licensees

Give:

- Pay a moderate annual subscription/commercial license fee

- May propose modifications, optimizations and additions to the material in the Mountain Safety Knowledgebase. Proposals will be carefully evaluated by the topic-specific workgroup of the Mountain Safety Knowledgebase. After an addition or optimization has been accepted and implemented, all users of the Mountain Safety Knowledgebase will have access to it.

As the Mountain Safety Knowledgebase is not based on voluntarism, everyone, independently of their socioeconomic background, has an equal chance to become a contributor.
Give and Take for Subscribers and Licensees

**Take:**

- As an alpine club, rescue organization, commercial course provider, mountaineering school, mountain guide association, public safety agency, defense competence center for mountain operations, power or construction company working in mountain terrain etc., you have access to illustrations, key instructional texts, instructional videos documenting what is consensus international "best practice" in mountain safety.

- Based on the specific needs of your staff, your instructors, your application environment, you create your company/organization-specific materials based on a solid, managed database of international "best practice"

- The annual subscription and commercial license fees of the Mountain Safety Knowledgebase are much smaller than what you would have to spend to create or optimize your training materials without external input
Give and Take for Subscribers and Licensees

- Get materials in many languages, all based on internationally agreed terminology. In international operations, in multi-lingual organizations and countries, dealing with international guest and participants, be sure that everyone has the same level of understanding when working with different language versions of the same strategy, method or technique.

- No need to care about compatibility issues, the materials of the Mountain Safety Knowledgebase is an internationally agreed consensus

- Using the content of the database according to the license contract makes sure that your organization uses the materials without IPR/copyright issues
Give and Take for Subscribers and Licensees

- Using the content of the Mountain Safety Knowledgebase gives your organization and courses the credibility and assurance to apply the most recent internationally recommended methods, systems, strategies and techniques.

- By being a subscriber/licensee of the Mountain Safety Knowledgebase, you support the sustainable development of new content for the Mountain Safety Knowledgebase. Optimized systems and strategies will help to further increase the safety of your members, clients, employees, soldiers and to make your training courses and commercial services more attractive.
Give and Take for Authors and Developers

Give:

- Give in all or a part of your IP to be managed by the Mountain Safety Knowledgebase (to all readers: please understand, for many authors, this means to "give-in" what they have created over years and in many cases over decades)

Take:

- In topic-specific workgroups, authors are able to get valuable feedback on their system, common performance testing and thus opportunities to optimize their work. Workgroup participation is paid worktime.
- The Mountain Safety Knowledgebase might be able to support R&D projects by providing funding and establishing connections to scientific programs.
- Revenue of commercial licensees makes it possible to continue your R&D work with financial support for resources and the worktime you invest.
Give and Take for Subscribers and Licensees

Take:

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