



Workshop #9

Risk Assessment - Interactive Demonstration of Practical Application

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Decision Taking in Risk Assessment

What information do you need for taking the right decision?

How would you decide?



A group of people wants to go back to the camp.

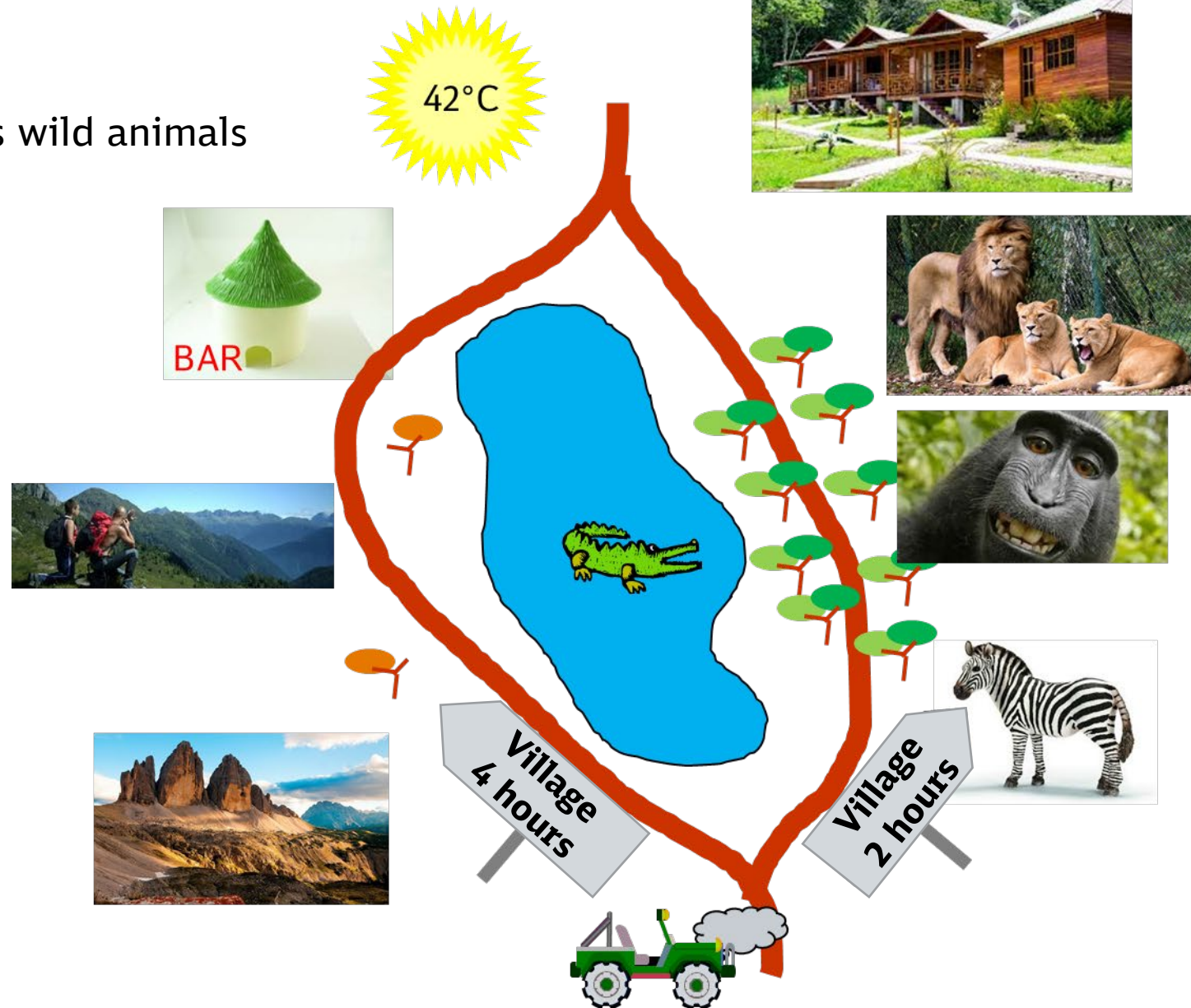
On their way back the car broke down.

Two possible ways can be taken to the camp.

One short track and one beautiful scenic track.

How would you decide now?

At the short track dangerous wild animals are expected to appear.



Practical Use Case – Hot Box Detection

A new hot box detection is to be installed into an existing high-speed train.



Existing Safety Measures:

The prevention of hazards that cause the overheating of wheelsets and axle boxes is controlled by **appropriate maintenance** and **operational procedures of the safety management system** of the railway undertaking which operates those passenger trains:

- **Predeparture checks,**
- **periodic planned maintenance inspections and**
- **preventive maintenance operations of Rolling Stock**

are put in place to prevent, detect and, when necessary, correct emerging failures of wheelsets and axle boxes (e.g. wheel bearing fatigue, loss of bearing lubrication in axle boxes, defective brakes or any other cause).

In addition to those preventive maintenance and operational procedures, **technical systems outside the train** are also used during operation to further prevent train derailments caused by the overheating of wheelsets or axleboxes:

- **Those technical systems, called “hot box detectors”, are laid down along the railway line at regular distances.**

A new hot box detection is to be installed into an existing high-speed train.



Function:

The function of those “trackside hot box detectors” is to scan passing trains for the overheating of wheelsets and axle boxes in order to alarm the traffic control center who will in turn :

- **inform the driver** by radio for stopping the train at an appropriate and agreed location, **before:**
 - **a fire appears or**
 - **the affected wagon, and possibly the whole train, derails**
- **reduce the speed of trains arriving in the opposite direction** and on adjacent tracks for mitigating the lateral shock risks caused by the blast at the crossing of two trains and which can potentially lead to the derailment of the train with a hot box.

What is your position to control the risk of a hot box on a train?

A new hot box detection is to be installed into an existing high-speed train.



Change:

For existing high speed passenger trains, already in service, instead of detecting the overheating of wheelsets and axle boxes only by functions of the infrastructure, the “**hot box detection functionality**” is also installed onto the train :

- **(1) The function of those “trainborne hot box detectors” is the same. They monitor the temperature of wheelsets and axle boxes in the area of bogies;**
- **(2) In case of detection of overheating, a lamp is lit in the driver’s cabin. The train driver can then stop safely the train at an appropriate location and verify whether additional operational actions might be necessary, for example for proceeding the journey further with a restricted speed.**
- **(3) The function under assessment is the “detection of a hot box event and the indication of the event to the driver” by a trainborne hot box detection system.**

Conclusion

A Risk Assessment is never “absolute”, it has to be adequate to:

- the foreseen use
- the identified hazards and its classification
- the user’s risk acceptance
 - Collective Risk Acceptance
 - Individual Risk Acceptance

- **As we have seen during the discussion, it is of fundamental importance to do a risk assessment not by your own but to have different points of view of a competent team to take the right decision for a sustainable risk control.**
- **Only by considering the different perspectives of the actors is it possible to maintain the level of safety, to limit the economic effort and to make the railway system to that mode of transport of this century.**
- **The safety measures depend on a various number of impacting factors. Therefore, a substantial analysis of the system under assessment is of fundamental importance.**

**Thank you very much
for your active
Participation!**

Any questions?

Do not hesitate to contact us!



Contacts

Marc Geisler

DB Systemtechnik GmbH

Head of Assessment Body

☎ +49 160 97460512

✉ marc.geisler@deutschebahn.com

Olivier Castellani

SNCF VOYAGEURS – Direction du Matériel

Chef de Projet Admissions à l'International

✉ olivier.castellani@sncf.fr



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is your success.**