# Concrete Questions

*(as a basis for the statements of the experts of the event "In Focus: The Ethical Challenges of Automated Driving", TU Graz, 11 March 2019)*

That technologies should generate benefits is part of what we expect of them. Experience teaches us that technologies can also cause damage. A part of the development work of new technologies is always dedicated to minimizing the dangers, the risks, which technologies hold for people, things and the environment.

Intention, negligence or human error, or technical faults and malfunctions can cause damage to motor vehicles beyond the legally defined and tolerated extent. The questions of responsibility in connection with such damage are largely regulated or judged by law.

The clarification of the cause is of great importance in determining responsibility for damage. Automated driving - in the sense of using a highly automated vehicle - presents us with new challenges in this context:

Up to now, the question of who or what was the cause - in the sense of fault - of an accident and to what extent has usually been a simple one to clarify. The weighting of fault has also become routine in most cases. The answer to the question of fault is based on decisions and actions taken by people, drivers or other persons involved in the accident.

But what if machines make decisions that were previously reserved for human beings?

> 1. Machines are less tolerant of errors than humans - one of the main reasons for introducing automated driving is the hoped-for reduction in the number of road victims and increased road safety.
> What is the degree of fault tolerance of an automated vehicle in traffic?
> How much trust in technology is needed to make fully automated vehicles a reality?
> How can consensus be reached on this question?

> 2. In the future, machines will decide who, what and to what extent will be injured in accidents. So far, this decision has mostly been made by drivers, consciously or unconsciously, rationally or irrationally. Technically accelerated decision making opens up alternative courses of action. Rational, ethically justifiable decisions between two or more options for action become possible in the first place.
> So what do decisions look like in situations which - due to the short decision period - have not been relevant to decision making so far?
> And who decides - technicians, lawyers? Which social groups should be included?

> 3 The term "decisive machines" is perhaps misleading. Machines only have a finite amount of information available, determined by sensors and other technical information sources.
> So who is responsible for wrong decisions, who for decisions that harm people?
> Or, if damage is unavoidable: Who is responsible if the machine chooses the action that causes the greater damage? Are not transparent algorithms responsible?

According to which algorithms do the machines decide?

How can it be guaranteed that algorithms are negotiated publicly or become transparent?

The workshop serves to discuss these and other new ethical and political challenges posed by automated driving.