The use of the UDS-Black Box in car accidents

Technical, legal, economical and political aspects

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INDICE GENERALE

Preface

This congress deals mainly with legal, medical and economical aspects of accidents with personal injuries. I congratulate the founders of PEOPIL and the organizers of this congress that they have chosen a cross-border and a cross-discipline approach for tackling the complex issue of personal injuries caused by car accidents which sum up to much human suffering and a huge amount of direct and indirect costs. In this context it makes absolute sense also to speak about a black box and its use in car accidents. We have listened yesterday and today various times to complaints that there is a need for evidence and plausibility on which claims especially for compensation of whiplash injuries can be based. It is exactly for the lack of evidence and reliable data in car accidents that the annual German traffic court conference (Deutscher Verkehrsgerichtstag) is demanding publicly from industry and politics to find relief for this deplorable situation. This goes back as far as to the early seventies of the 20th century also calling for field tests and practical experiences and was several times repeated during the last 30 years.

At that time still named .KIENZLE., Siemens VDO Automotive had already a longstanding experience with other onboard data collecting devices, namely the tachograph and took up the challenge. The result is an accident data recording device called .UDS-Black Box. beeing in the market and in several thousands of vehicles for about eight years now. Television and the press have reported more than once about the use of the UDS- Black-Box not only in Germany but also elsewhere. The table of content which is dealt with can be seen in this chart.

Chart 1

1. A modern mass phenomenon - The european view
2. Lack of evidence - lack of justice
3. Sophisticated onboard data collecting
4. Prevention schemes, benefits and projects
5. Constitutional rights and legislative reaction
6. Two prominent examples

1. A modern mass phenomenon – The european view

Speaking on an international conference we should first have a look on the framework set by the European Commission. Its efforts to safeguard mobility and to combat with an annual fatality rate of more than 40.000 road deaths in the Union are described in the Commission's White Paper of September 2001 titled: .European transport policy for 2010: time to decide..

The Commission says:

„**In the battle for road safety, the European Union needs to set itself an ambitious goal to reduce the number of people killed between 2000 and 2010. The Commission plans to marshal efforts around the target of halving the number of road deaths over that period ... through action at two levels:**

- harmonisation of penalties,

- **promotion of new technologies to improve road safety.“**

Noteworthy is what follows:
„The Commission may, following a review of the situation in 2005, propose regulatory measures.“

What does this mean ? The Commission makes a clear statement to that in the White Paper as well:
.Technological developments will also enhance the usual methods of control and penalties, with the introduction of automatic devices and on-board driving aids. In the same context, the eventual fitting in road vehicles, as in other forms of transport, of **Black Boxes** to record parameters which explain the causes of accidents, will

- make motorists more responsible,
- speed up court proceedings following accidents,
- lower the cost of court proceedings and
- enable effective prevention measures to be taken..

It is quite a multiplexity of reasons the commission has found for putting the Black Box on its agenda. Road safety alone would already be a strong argument. But the Commission goes beyond that. Socio-economic reasons, justice for the victims, relief for the courts and last but surely not least providing data for the research of a multifold of prevention measures are regarded as the probable impacts of the mandatory use of the black box.

2. Lack of evidence – lack of justice

The starting point is the technical maturity of the black box. There are quite a number of experiences with traditional on-board data collecting devices which can be used for the Commission.s arguments for a modern black box to become mandatory for every type of vehicle. As far as court proceedings are concerned, reasonable estimations allow the conclusion that 10-15% of all truck and bus accidents in Germany could not be properly cleared up at court if there were no diagram disks produced in tachographs to analyse. SIEMENS VDO experts alone analyse aprox. 2.500 diagram disks for accident investigations in Germany per year. Throughout the past 50 years courts and accident experts required aprox. more than 100.000 disk analyses for this purpose.

But a deterioration of this standard of accident investigation and justice has to be feared when 29 million commercial vehicles will be without provisions for accident analysis in future if no counteraction is taken. The digital EC-control instrument for the aprox. 6 million heavy commercial vehicles (busses and trucks > 3,5 t) which will substitute by virtue of the EC-Regulation 2135/98 the analogue device from 2004 onwards will not allow accident reconstruction as accustomed to by the analysis of the diagram disks. Furthermore light commercial vehicles (2,8- 3,5 t) which up to now do not fall under any type of control legislation are increasingly put into service all over Europe (aprox. 23 million vehicles). In terms of accidents they outnumber by far the heavy trucks, especially in speed limited urban and rural areas as DEKRA findings reveal for Germany. As far as accidents with private cars are concerned estimations of lawyers specialised in vehicle accidents reach up to 80% of the accidents which are not properly dealt with at court or with insurance companies because of lack of technical data.

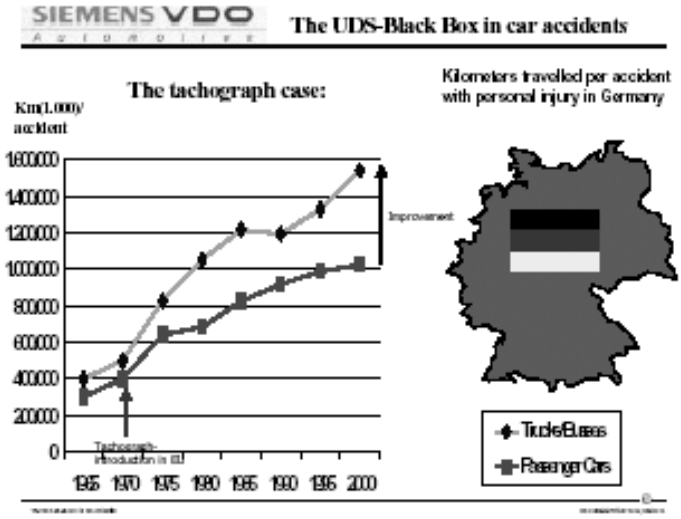

Chart 2
For most countries it was extremely difficult to collect the necessary statistical data for a period of more than 25 years. Nevertheless at least some more or less significant figures are available also for the UK and Italy.

Apart from being useful for accident investigation the use of on-board data collecting devices like the tachograph with the diagram disks can also have positive results on the accident rate itself. As can be seen from chart 2 trucks and busses for which the tachograph as well as road side and company checks are mandatory since the early seven-ties show a far better km/accident ratio than passenger cars which are not equipped.
The temporary decline of the positive development in the early ninties is due to German reunification with the side effect of many accidents caused by non-equipped commercial vehicles. After the EU-tachograph standard was established also in the new Länder, a continuation of the previous development could be noted.

Another example for the necessity to care for better evidence in traffic accidents are the tests conducted with human beings as eyewitnesses. Stern-TV broadcasted a few years ago a test with two groups of policemen and engineering students invited to a conference in Berlin. Before they entered the conference building a number of deliberate car collisions occurred next to them. Almost none of the guests, even not the policemen as .professional eyewitnesses. could later report correctly about important details of the vehicles and the drivers involved. A similar test was conducted by the Berlin Police itself together with other organisations in summer of 2001. The performance of judges and other .law-people. who served this time as test persons can be studied from chart 3. The conclusion for everybody involved in traffic law can only be that the eyewitness is not state of the art.

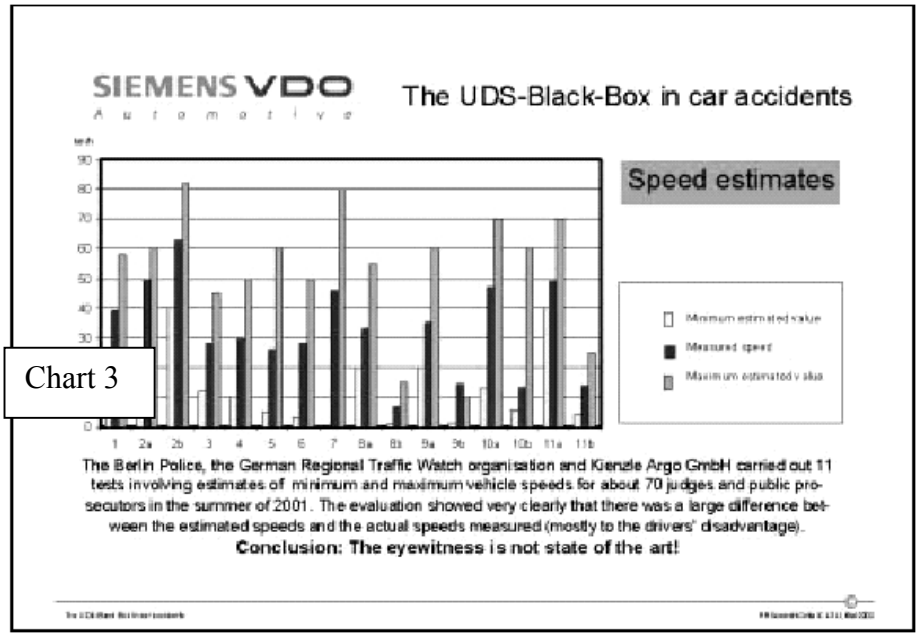

Chart 3

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3. Sophisticated onboard data collecting

The UDS-Black-Box presently offered by our company for the market is a sophisticated electronical device designed to collect data only if an unormal event, i.e. an accident occurs. It has the size of two cigarette boxes and is firmly fixed with the chassis usually under the seats or in the boot of the vehicle. The heart inside the UDS Black.Box are two autonomous sensors, mounted in a right angle to each other. They note depending on the mass of the vehicle the black box is installed in the impacts on the vehicle, the directions they come from, the sequences, their severity and length (acceleration over the time) and date and time of the day. If the impact by definition is an unnormal one the sensors trigger the registration of these data and other status information (ignition, lamps, safety belt contacts etc.) for the period from 30 seconds before to 15 seconds after the crash. The vehicle speed can be deducted from the acceleration data and be compared with the v-signals coming from the wheels thus allowing conclusions about blocked wheels and skidding. The UDS Black-Box is capable to register up to nine events or accidents.

A typical situation after a pile-up collision with some of the data read out from the UDS Black-Box can be studied in charts 4 and 5. It is to be seen that vehicle No. 3 equipped with the UDS Black-Box received first an impact from the rear before the front impact occurred. The paramount question whether driver No.3 is liable for the damage caused to vehicle No. 2 can clearly be answered with .no.. Apart from that an in-depth data analysis can also give informations whether the impacts received from vehicle No. 4 and passed on to vehicle No. 2 might have contributed to whiplash injuries of the inmates in vehicles No. 2 and No.3.

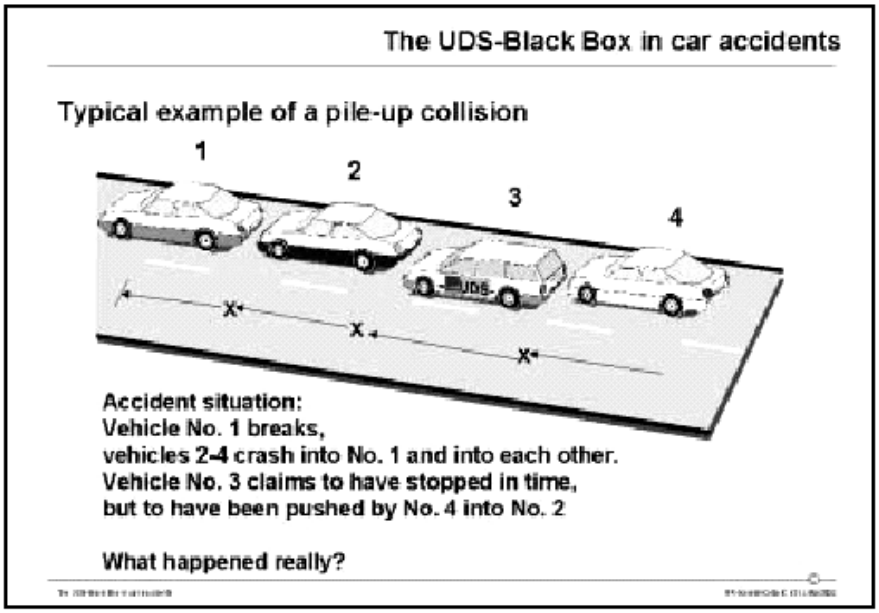
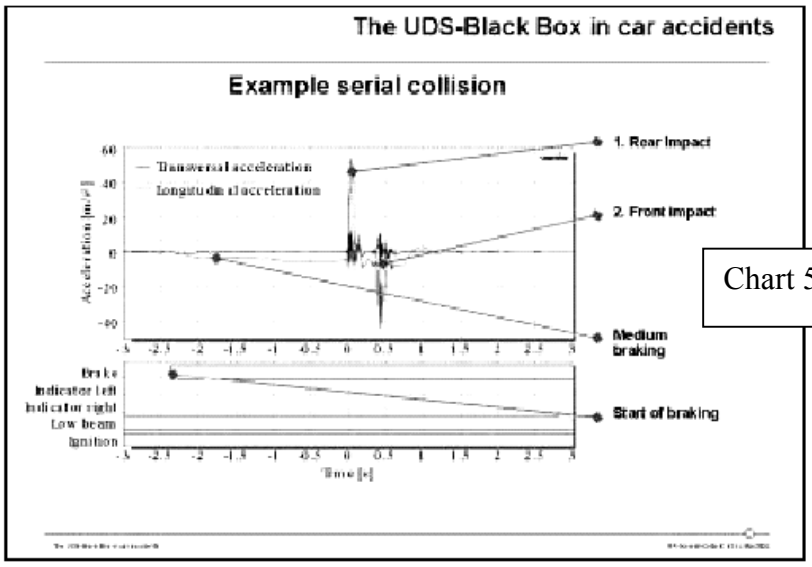


Chart 4

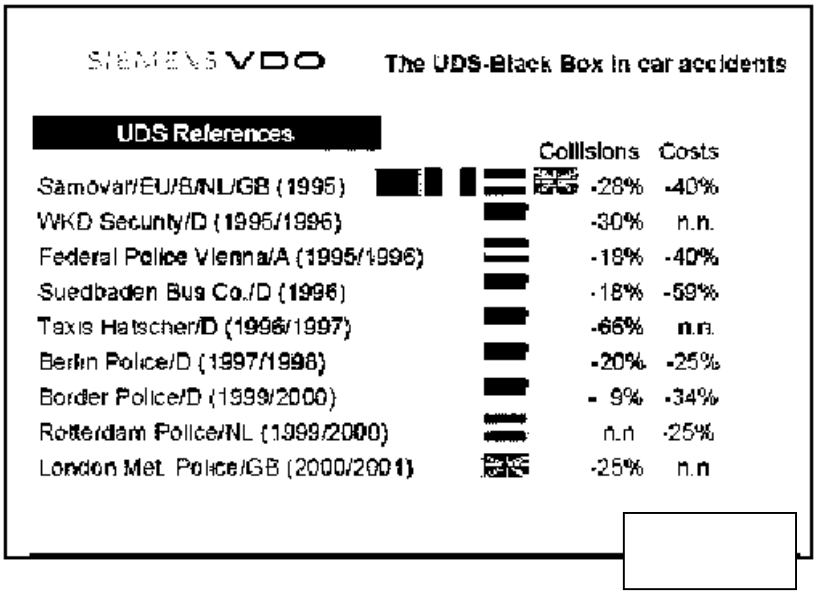


4 . Prevention schemes, benefits and projects

The experiences collected with the use of the UDS Black-Box in car accidents during the past years can be summed up as follows:

4.1. Accident and cost reductions in professional fleets

Practical experiences with the UDS-Black Box in fleets (taxi, busses, police etc.) throughout Europe have achieved reductions of accidents and damage costs of aprox. 25% or more (see chart 6).



4.2. Investigation improvements

An intensive investigation project conducted by the German Federal Road Institute (Bundesanstalt für Strassenwesen, Bast) shows that many of the decisive factors of drivers. behaviour in the pre-crash-phase can be cleared up to 100% by use of the UDS-Black Box.

4.3. Detection of insurance fraud

Rental cars are used for deliberate accidents causing damages to other cars for subsequent insurance fraud. The damage volume in rental car companies caused by fraudulent accidents can be reduced considerably by UDS-Black-Boxes detecting the true cause of what has happened. Pay offs are possible already after one year.

4.4. Less offenses and less damages by young drivers

Preliminary results of a long term field test with young drivers reveal that those having their cars equipped with the UDS-Black Box caused 15% less entries in the federal traffic offence register and 5-7% less accident damages.

4.5. More benefits and progress to be expected

A considerable number of research projects and client applications is already on the way or under study (see charts 7 and 8). More benefits and progress for society, road safety, companies, training in driving schools or accident notification can be expected from that.

Chart 7

VDO The UDS-Black Box in car accidents

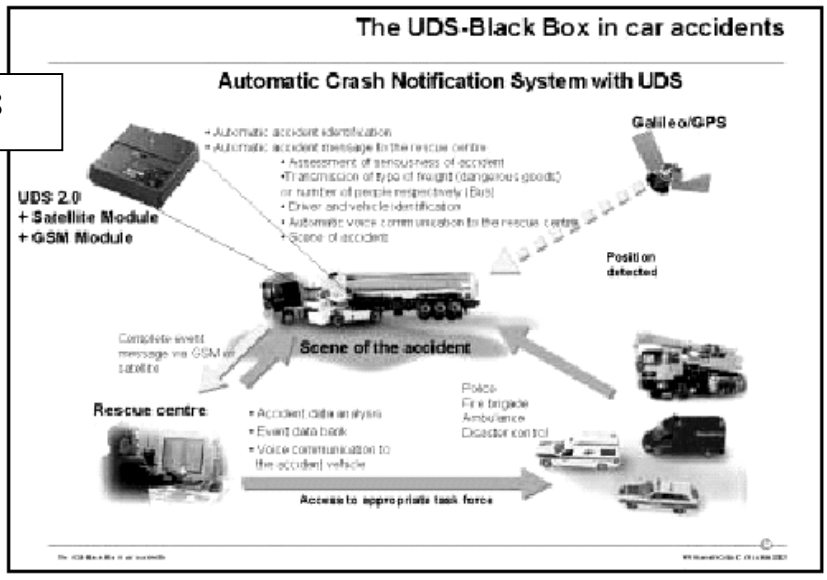
UDS Projects and Perspectives

Project	Country - Year	Responsable/Partner
Young Drivers	D - since 1998	Governments/Private Inst./Insurances
KriSiS	D - 1999/2000	DVR/Driving Schools
Canton Polices	CH - since 2001	Bossard AG/Winterthur Insurance
UDS-Evaluation	I - 2001	A.N.I.A./Winterthur Insurance
Fleets Milano	I - 2002	Winterthur Insurance/Catering Co's.
Risk Management	CH - 2002	Winterthur Insurance/Fuji Co.
FaBeTa	D - 2002	DVR/Taxi Association/Insurances
Transmission/Identific	D - 2002	Kienzle Argo, Berlin
Police Motor Cycles	E - 2002	Madrid Police

Visualisation of driving activities — German Assoc. of Driving Schools

Automatic Crash Notification — EU e.a

Chart 8



5. Constitutional rights and legislative reaction

5.1. No self-incrimination in penal cases

Specific and independent studies as well as jurisdiction in similar fields like blood tests, arrest of vehicles or confiscation of tachograph charts show that no fear can reasonably be justified because the arrest of black-box data by the police for accident investigation purposes might undermine one's right to refuse self-incrimination.

5.2. Defendant's obligation in civil cases

The same applies to a defendant's obligation to hand out black box data by order of a civil court on request of a plaintiff to prove his case. This has been ruled in analogy to cases filed on documents in the hands of the defendant. See the recent case with government cars under point 6.

5.3. Adequate form of legislative reaction

Taking into account that the Black Box is designed to register only event data, i.e. to allow the clearing-up of accidents damaging life, health or property of others one could qualify this form of control to be more in line with personal liberty than unlimited supervision of abstract offences by means of e.g. radar cameras. This is not to say that the latter were not useful or not constitutional. They are traditional forms of regulation and education. But it qualifies the mandatory black box as an instrument for the accomplishment of human rights and by all means adequate form of legislative reaction towards the lack of justice on the roads and in the courts.

6. Two prominent cases

We all still remember the tragedy which happened on August, 31st 1997 when Princess Diana of Wales. car crashed against a tunnel wall in Paris. Never ending investigations gave room for rumours about a collision with another car. What really happened never became entirely clear. A UDS-Black Box would have given many of the necessary answers.

The new German government which was elected into office one year later ordered to equip its vehicles with the UDS-Black-Box. In September 2000 two of these government cars crashed into each other and into the car of an independent entrepreneur stopping at a red traffic light in down town Berlin.

A quick compensation for the damaged car was reached. But the driver was left with the question open whether he would get also a compensation for what he claimed was a whiplash injury. In December 2001 a compromise over 750 € was settled at a court of first instance in Berlin. But the government representative revoked the compromise in time, claiming that the impact had only been v = 4 km/h which was to little to cause a whiplash injury, a statement everybody in this audience would agree upon. As the plaintiff could provide a medical expertise clearly saying that he had had a whiplash injury the case had to go back to court. In February 2002 the victim and plaintiff called for the support of the mass media while the judge ordered the German government to hand out the data of both black-boxes for a thoroughful read-out by an independent expert. It was this the first time that this question had to be answered by a court though the German federal court of justice (Bundesgerichtshof) had some rulings before saying that the legal obligation of a defendant to hand out documents which are relevant for the plaintiff to prove his claim has to be applied also on technical data.

Preliminary opinions of accident experts broadcasted by TV came to the conclusion that there might well have been a whiplash injury due to probable assumptions that either the black-box of the wrong car or the wrong impact in the black-box of the right car had been read out by the government officials. Because this is important to investigate: Which were the impacts and their forces the first government car ultimately transmitted to the victim's car and not what were the impacts between the second and the first government car ? The latter could only be of significance if the combined mass of both armoured government cars had hit the light private car.

Whatever the outcome of the experts. investigations will be, it will be of benefit. First it will be a benefit for justice. Facts will be provided which hardly can be argued about. Justice as a means of bringing the peace of law to opponents will be achieved. Secondly it will also have political and economical dimensions: The result will either show that by means of modern technology also an ordinary citizen can win his case against .those in power.. Victims of car accidents and their lawyers fighting endlessly their cases in the courts and with the insurance companies might share this opinion. Or the tax payer will be content to learn that public budgets can not be abused for unjustified claims. Insurance companies and their clients who complain about rising premiums might share this opinion.

Conclusions

Whatever follow-up one might come to after this congress, and again I congratulate to the cross-border and cross-discipline character of it, the message *urbi et orbi* from Rome should be that for several of the problems and complaints which came up here relief can be found by an technical and political approach. One should not repeat the errors a congress of german tort law jurists committed a few years ago. They debated several days about the possibilities of shifting the burden of proof in mass collisions and found wonderful resolutions for their problems without even questioning the basic assumption according to which the clearing up of the causes and sequences of mass collisions was technically not possible. When confronted after the congress with the sophistication of the UDS Black-Box one of the main speakers and protagonists of a reform of the burden of proof simply stated to me:
.If I had known about the UDS Black-Box before the congress my proposals would not have been necessary..
The congress here in Rome was surely necessary. I thank you for your attention.

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