ADAC accident research:

Response teams’ instant access to selective information saves lives:
ADAC on-board rescue sheet
Emergency response chain – the chronology of rescue

- Best practice on emergency response requires first responders to deliver traumatised patients to a hospital within one hour (Golden Hour) to minimise mortality.
- Within the Golden Hour, the emergency response chain allocates **20 minutes** for technical rescue operations.
Patient-focussed rescue is “…the fastest possible extrication of victims considering injury patterns” [1]

- Emergency physician’s diagnosis (including tentative diagnosis) defines the rescue approach (e.g. suspected spine injury)!
- Preventing additional injury during the rescue operation must always be a prime consideration (e.g.: spine twist → paraplegia, removal of glass → cuts, extracting patient with force → fractures)
- Victims should never be “extracted with force” from the vehicle (e.g. through windows, door opening etc.) unless for **rapid release rescue** (warranted e.g. for resuscitation)

Cabin stability: a blessing for passengers – a curse for emergency response teams

- Stable cabins are vital for surviving severe accidents
- Higher structural vehicle stability complicates technical rescue
- In 19% of the severe accidents documented by ADAC air rescue technical rescue is a problem
- The newer a vehicle, the longer technical rescue may take
- The “Golden Hour” (first hour post crash) promises good chances of survival for road casualties

Source: ADAC accident research
Current operational rescue problems

- **Cutting**
  - 26% of problems with conventional rescue cutters are due to insufficient cutting force
    Reason: high-strength steel and other cabin reinforcing elements
  - 33% of rescue cutter problems are due to insufficient shear angle
    Reason: modern vehicles have wider roof pillars

- **Spreading**
  - 72% of problems with rams are due to difficulties locating suitable purchase points (for removing trapped victims)

- **Vehicle identification**
  - First responders fail to positively identify a vehicle and have no reference to their emergency response guides
  - For 64% of the vehicles, first responders do not recognise the year of manufacture

Source: ADAC accident research

![On-site vehicle identification by fire & rescue services (n=128)](chart.png)

- Positive on-site identification
- Incorrect identification (upon later review)
- Unidentified on site

Source: ADAC accident research
Solution:
Rely on information to save time: on-board rescue sheet

Operations without rescue information

Operations with rescue information

- ADAC response team survey:
  - 2 response teams operating independently
    Team 1: without rescue information
    Team 2: with OB rescue sheet
  - Result:
    - Team 1: (no OB rescue sheet)
      Delayed by cabin scan, wrong cutting lines, no battery localisation
    - Team 2: (with OB rescue sheet)
      Number of airbags known
      V-shape cuts in high-strength steel
      No dangerous cuts in airbag generator risk zone

- Time to access the victim was nearly halved by removing the roof (10min instead of 18min)
- 30% time-saving on the total rescue operation (6-9min)!

Source on-board rescue sheet: Moditech, cutting point marks: Mercedes Benz emergency response guide for passenger cars
Solution by ADAC accident research:

1. **Standardised rescue sheet:**
   At the initiative of ADAC, manufacturers and importers have provided standard OB rescue sheets since 2009 at:
   www.rescuesheet.info

2. **Hardcopy rescue sheet:**
   Best interim solution pending ratification of electronic data transfer (approx. 2020).
   Uniform practice of keeping on-board rescue sheet behind driver’s sun visor and attaching the ADAC rescue sticker to the windscreen

3. **Digital rescue sheet:**
   2 options for implementation:
   a. Computerised rescue sheets search based on licence plate number by fire and rescue services
   b. 2012+: **eCall** roll-out for new vehicles*

*eCall market penetration expected for 2020
Towards the digital on-board rescue sheet

ADAC initiative:

Idea:
Provide fast on-site access to non-commercial database containing information for all makes

Step 1:
Approach manufacturers to release data (manufacturers’ documents)

Step 2:
Build rescue sheet database for fast download of relevant rescue sheet

Step 3:
Interface rescue sheet database with Federal Motor Transport Authority (KBA) data transfer facility (search by licence plate number)

Step 4:
Integrate database in dispatch software (rescue control centres) or fire brigade information systems (on-site)

Aim: Fast access to rescue sheet at the rescue scene
Towards the digital on-board rescue sheet

Database implementation:

Save all **released** manufacturer on-board rescue sheets as **individual sheets**

Define rescue sheet identifiers*:
- manufacturer
- model
- body type
- number of doors
- YOM

*minimum data required to trace rescue sheet

Combine database, on-site search and vehicle data transfer (VIN or licence plate) to permit download of relevant rescue sheet/vehicle information at the rescue scene

Rescue control centres / response teams will be able to use this feature subject to data release by manufacturers
Towards the digital on-board rescue sheet

1. Make
   - Renault

2. Body type
   - Hatchback

3. Model
   - Mégane Limousine

Search result
- Renault Mégane five-door saloon (III)
- 11/2008 -

Click to download rescue sheet
Outlook

Crash alert (manual or eCall)

Rescue control centre

VIN / licence plate decoder

Rescue sheet database

Fire brigade

colour-coded*

Situation
Rescue sheet database for 90% of the market (software implementation in place)
Response teams are able to run search by licence plate number
Manufacturer data not yet fully released

Prospect:
Search by licence plate number / VIN transfer will allow response teams to identify the vehicle (prior to call-out) and obtain the matching rescue sheet

* identifying potential hazard zones
What vehicle manufacturers can do

• provide relevant rescue information for each airbag-equipped vehicle model at least in English on a standardised A4 rescue sheet (cf. German template)
• on this rescue sheet, indicate the recommended cutting points to facilitate cutting high-strength steel structures and prevent cutting into airbag gas generators
• indicate the purchase points in which to place hydraulic rams etc. for spreading footwells
• make the model-specific rescue sheet available on the Internet and/or through their authorised dealers
• deliver new vehicles with the rescue sheet in place behind the driver’s sun visor
What political decision-makers can do

- define harmonised standards for rescue technology and rescue tactics
- require car manufacturers to make model-specific rescue sheets available in a central database where, in an emergency, rescue control centres from all over Europe can download the specific sheets for any type of vehicle and send them to the rescuers on-site
- require fire and rescue services to check their technical equipment and upgrade their hardware if it does not comply with the state of the art
- require rescue control centres and fire brigades to have an IT infrastructure adequate for electronic data transmission