EuroTAP
European Tunnel Assessment Programme
History:

1999: 20 tunnels tested
2000: 25 tunnels tested
2001: 16 tunnels tested
2002: 31 tunnels tested
2003: 25 tunnels tested
2004: 27 tunnels tested

EuroTest partners realized
144 tunnel tests in 6 years
EuroTAP:

• European consortium of 12 EuroTest automobile clubs from 11 European countries
• Project management ADAC, coordination FIA Brussels
• Technical realization since 1999: DMT (Deutsche Montan Technologie)
• Support by EU Commission
• Three year programme 2005 until 2007
• No comparable programme within Europe
• No competition with national risk analysis
Which tunnels are tested?

- Significance for European transit traffic
- Minimal length of 1 km
- High traffic volume
- Part of TERN
The checklist

- Basis: RABT 2003 (directives on the equipping and operation of road tunnels)
- Recommendations of the UNECE (United Nations Economic Commission for Europe) expert group on the safety of road tunnels, Dec. 2001
- Opinions of PIARC (World Road Association) and CEDR (Conference of European Directors of Roads)
- EU Directive 2004/54/EC
- National rules of the 6 major European tunnel states: Italy, Austria, Germany, France, Spain, the UK and Switzerland
The categories

1. **Prevention (48 %)**
   - Traffic, traffic surveillance (19%)
   - Tunnel system (14%)
   - Lighting, energy supply (8%)
   - Emergency management (7%)
The categories

2. Incident management (52%)
   • Fire protection (19%)
   • Escape, rescue (13%)
   • Communication (11%)
   • Ventilation (9%)
The safety potential

• describes all constructional, technical and organisational measures that are to prevent or limit the extent of an incident. It is calculated as the sum of the points awarded in the described categories

• must be considered in the light of the result of each tunnel’s risk assessment, which is shown in the risk potential
The risk potential

- describes the statistical incident probability and expected damage severity
- calculates the parameters: traffic volume per year (in relation to the tunnel length), share of HGV per day and tube, traffic type, vehicles per hour and lane, situation of hazardous goods, longitudinal inclination, intersections, entries/exits
- improves the result of the safety potential by up to 40%
### Risk potentials of prominent tunnels

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<tr>
<th>very high</th>
<th>high</th>
<th>medium</th>
<th>low</th>
<th>very low</th>
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<td>Plabutsch / A</td>
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<td>Felbertauern / A</td>
<td>Loibl / A+SLO</td>
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<td>St. Bernhard / CH + I</td>
<td>Maurice Lemaire / F</td>
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<td>Somport / E + F</td>
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<td>Westerschelde / NL</td>
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Basic principle

The higher the risk, the higher should be the supply of safety measures.
K.O. Criteria:

• Update of methodology in 2006
• New quantitative element in the originally qualitative assessment
• Reflection on the fact, that certain deficiencies can not be compensated by other safety measures
• Consideration of interdependences of different safety measures in the assessment
• Presentation of these interdependences in single sheets
Risk Potential → Basic result → KO criteria → Final Result

Safety Potential → Basic result → KO criteria → Final Result
Result by points and rating

- Very good: 90% or more
- Good: 80 - 90%
- Acceptable: 70 - 80%
- Critical: 60 - 70%
- Poor: under 60%

EuroTAP: Meeting the standards of the EU directive is at least rated „acceptable“
Test fails

• 1999: 8 out of 19 tunnels: 42%
• 2000: 8 out of 25 tunnels: 32%
• 2001: 4 out of 16 tunnels: 25%
• 2002: 8 out of 30 tunnels: 27%
• 2003: 11 out of 25 tunnels: 44%
• 2004: 4 out of 27 tunnels: 15%
• 2005: 8 out of 49 tunnels: 16%
The most frequent deficiencies

- Escape: no additional escape routes in tunnels with one tube, insufficient indication of emergency exits, distance between emergency exits too long
- Fire ventilation: no remote-controlled opening/closing of exhaust air outlets, functioning of ventilation systems not tested
The most frequent deficiencies

- Fire protection: no „hot“ training of the fire brigade, fire brigades stationed too far away from tunnel, no automatic fire detection
- System: only one tube, no lay-bys, emergency lanes and footpaths
- Traffic: no/insufficient video surveillance
- Communication: emergency phones not protected against noise, no information via radio traffic
The Programme

2005
• 49 tests and 49 tunnel info sheets online

2006
• January: Distribution of 2.5 million leaflets
• 28 April: Publication of 52 tests
• May: Publication 51 of tunnel info sheets

2007
• April: Publication of 50 tests
• May: Publication of 50 tunnel info sheets
• Dec.: Audit
The objectives

- **Foster improvements** by means of systematic benchmarking
- **Show the developments** of safety performance over the years
- Help to improve **tunnel safety awareness** among European citizens
- Make people aware of **how to behave correctly** in tunnels
Tunnel info sheets

- By May 200 tunnel info sheets published on the internet web sites of participating clubs
- Travel service for car drivers with information about traffic regulations and relevant safety installations
Leaflet

- Distribution of 2.5 million leaflets directly to club members
- Further distribution through external partners (e.g. tunnel operators, industry or national authorities)
- Coordination of contents with EU Commission, CEDR and club experts
Campaign "Safe Tunnels"

- May 2004: 50 tunnel info sheets
- December 2004: PC game "Safe in the tunnel"
- 19 January 2005: Symposium
- December 2005: DVD „Safe in the tunnel“
Clubs’ distribution channels:

- Club magazines (a total of 40 million members)
- Internet (club web sites)
- Press releases
- Press conferences
Unique media platform

• Extensive Europe-wide media coverage of EuroTAP contents and messages
• Example 2005 tunnel test:
  - TV: 58 million viewers
  - Radio: 25 million listeners
  - Print: 84 million circulation
People in the tunnel behave wrongly.

Tunnel simulation in Netherlands, 2002
It can happen anytime.
Tunnel accident in Austria
Robert Sauter
6 April 2006, Estoril