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Potentials of R&D to increase road safety,
Acoustic Monitoring of Tunnels

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Introduction

- | Road safety is actively supported by a modern traffic management
- | Basis for modern TM = collection of traffic data
- | Video detection allows for the first time to detect events directly and quickly
- | BUT, disadvantages still exist:
 - | changing light conditions (shadows)



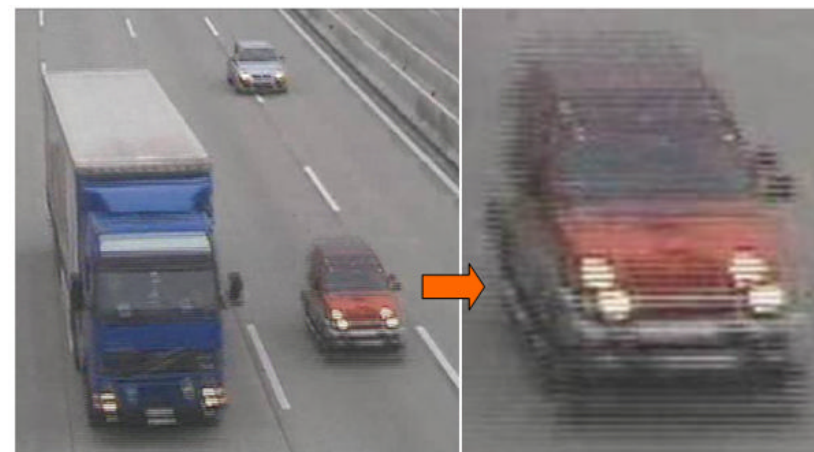


Introduction (2)

- | blooming of the Sensor (headlights)



- | Progressive scans



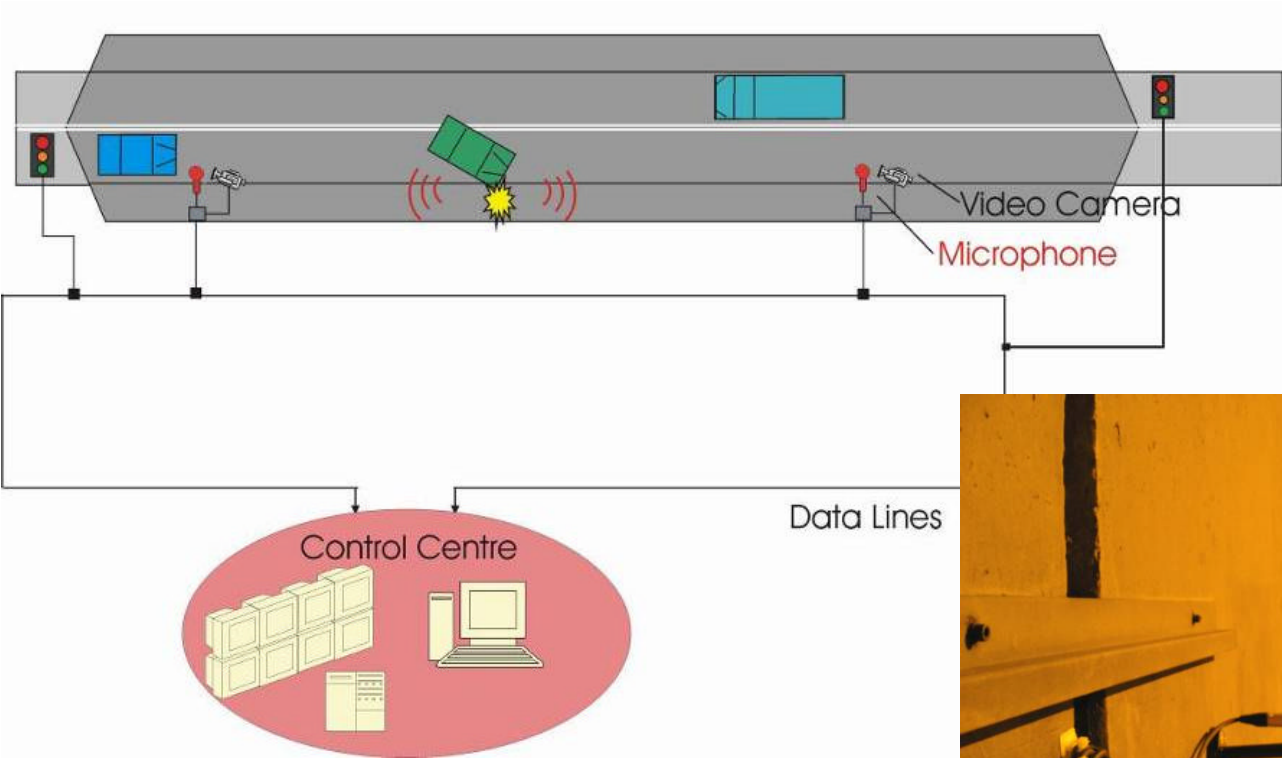


Acoustic Monitoring of Tunnels

- | Innovative idea of ASFINAG and Joanneum Research to solve described disadvantages
- | Goal: Developing, implementing and testing of an acoustic tunnel monitoring system
- | Detection of any possible sound anomalies
 - | Vehicle crashing into the tunnel wall
 - | Two vehicles crashing into each other
 - | Squealing tyres
 - | Anomalies in the sound of individual vehicles
 - | ...



Schematic structure



Phase I - Specification of the pilot system

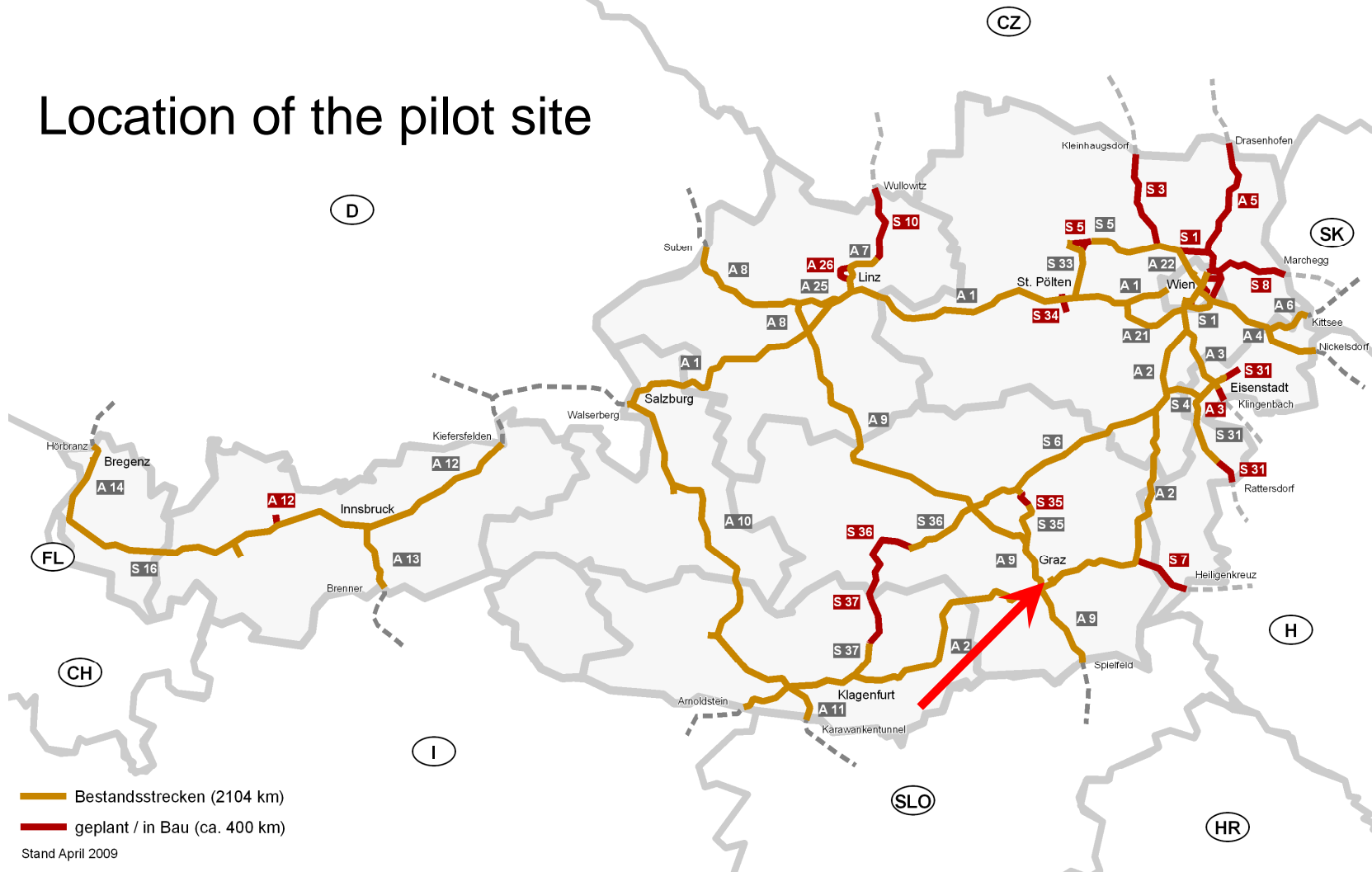
- Developing of the requirements for the microphone
- Specifying the digital transmission system
- Building up the sound database;
incl. a crash-test:





Phase II – Field trial

Location of the pilot site





Phase II – Field trial (2)

- | Further development of the analysis algorithms
- | Implementation of the entire analysis framework in the Plabutsch tunnel → so the evaluation of sounds could be performed in real-time
- | The tests in the Plabutsch tunnel should
 - | a negligible fault alarm rate
 - | a correct classification rate of 99.8%
 - | a maximum response time of 0.4 seconds



Forecast and Conclusion

- | Based on the promising achievements of described R&D project
 - | a long-term pilot trial is intended to evaluate the pros and cons of this technique in detail
 - | a follow-up R&D project, called HI-MONI is planned → to minimise introductory described technical disadvantages of video detection by combining video and audio detection also outside tunnels



R&D is one highlight...

...the Road Safety
Action Programme 2020
of ASFINAG includes
around **100 measures!**





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