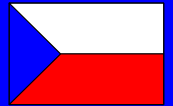


Remote WIM Systems in Alpine Tunnels

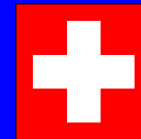
Emil Doupal, Ph.D.

Transport Research Center, Czech Republic

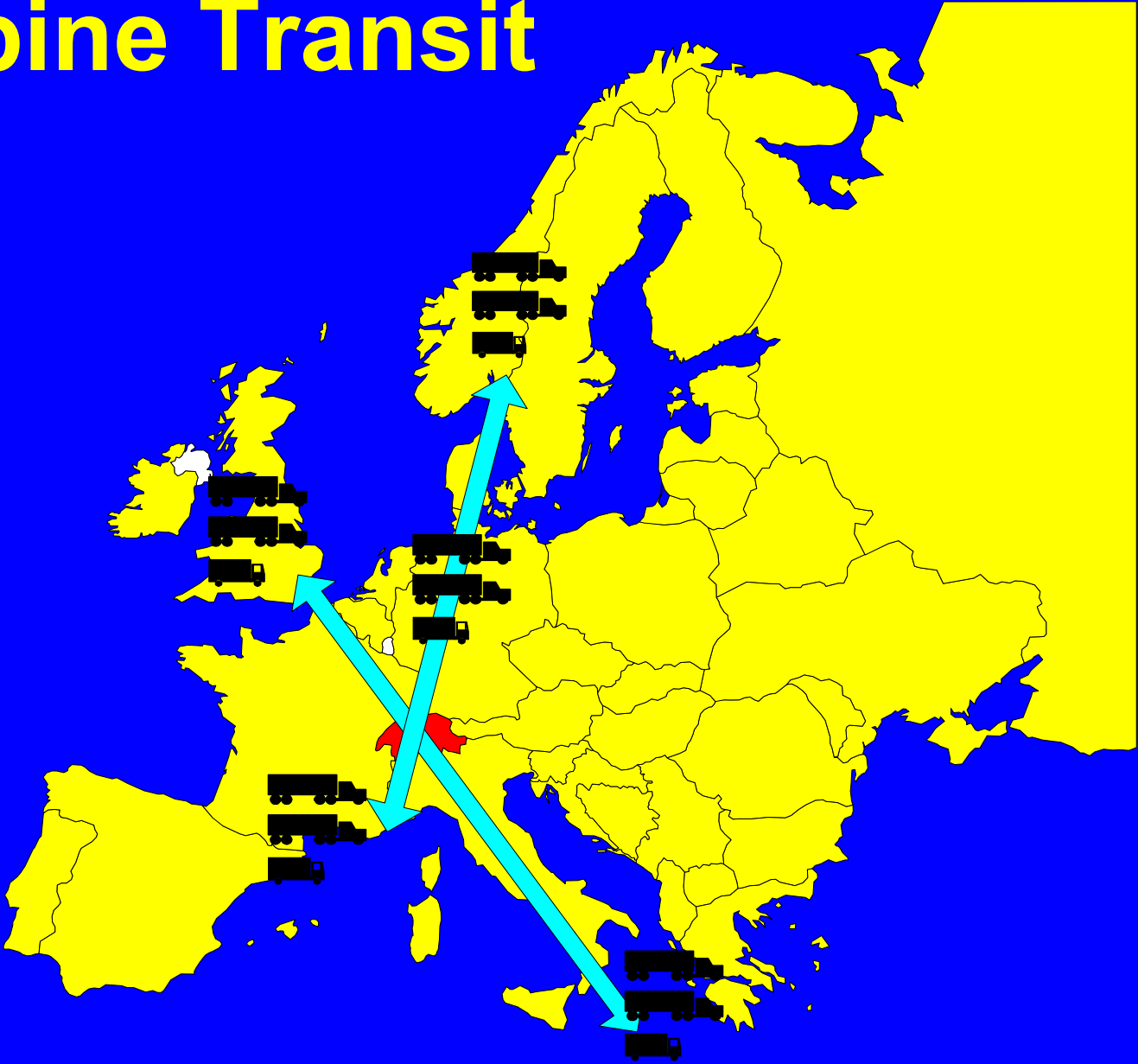


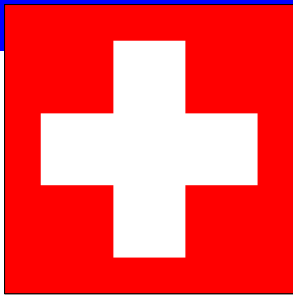
Reto Calderara

Kistler Instrumente AG, Switzerland



Alpine Transit





Switzerland



SWISS ALPS



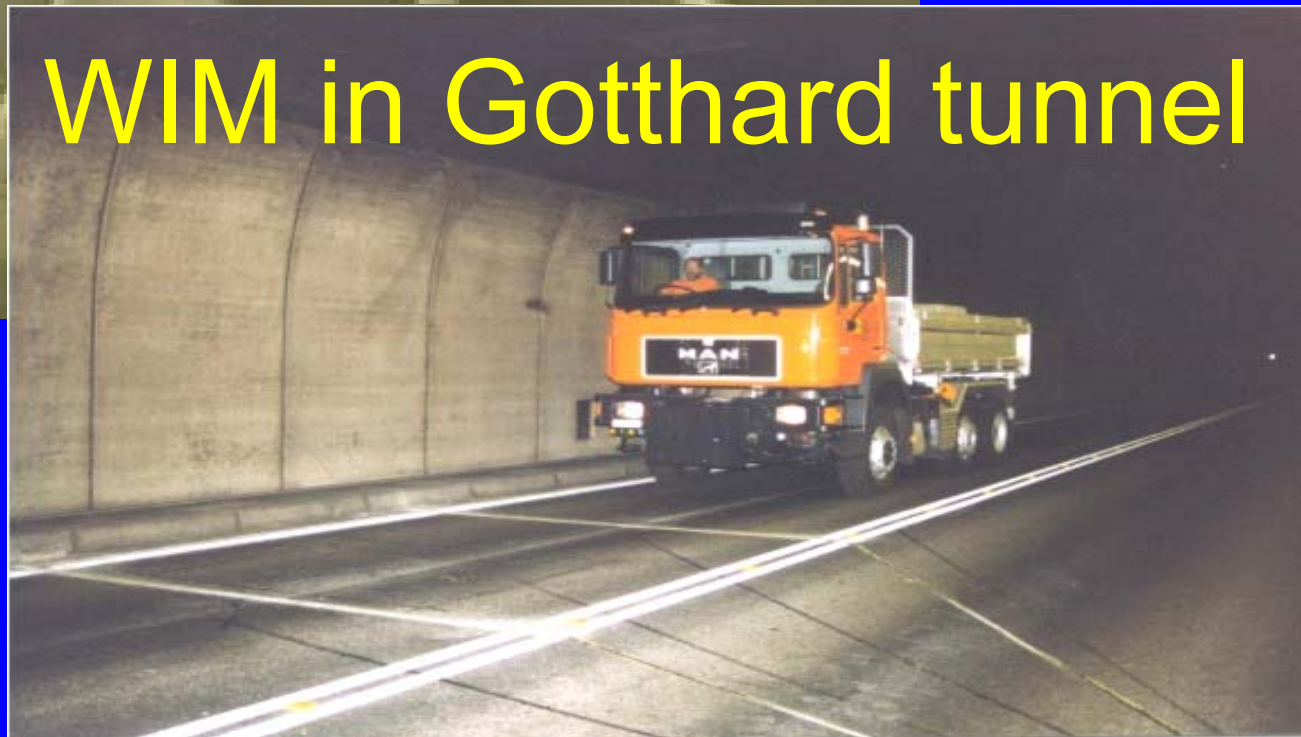
Backgrounds

- Environment & Alpine Transit
- Increase efficiency of enforcement -
preselection of overloaded vehicles
- Provide advance weight information on
approaching vehicles

Gotthard tunnel 16.9 km

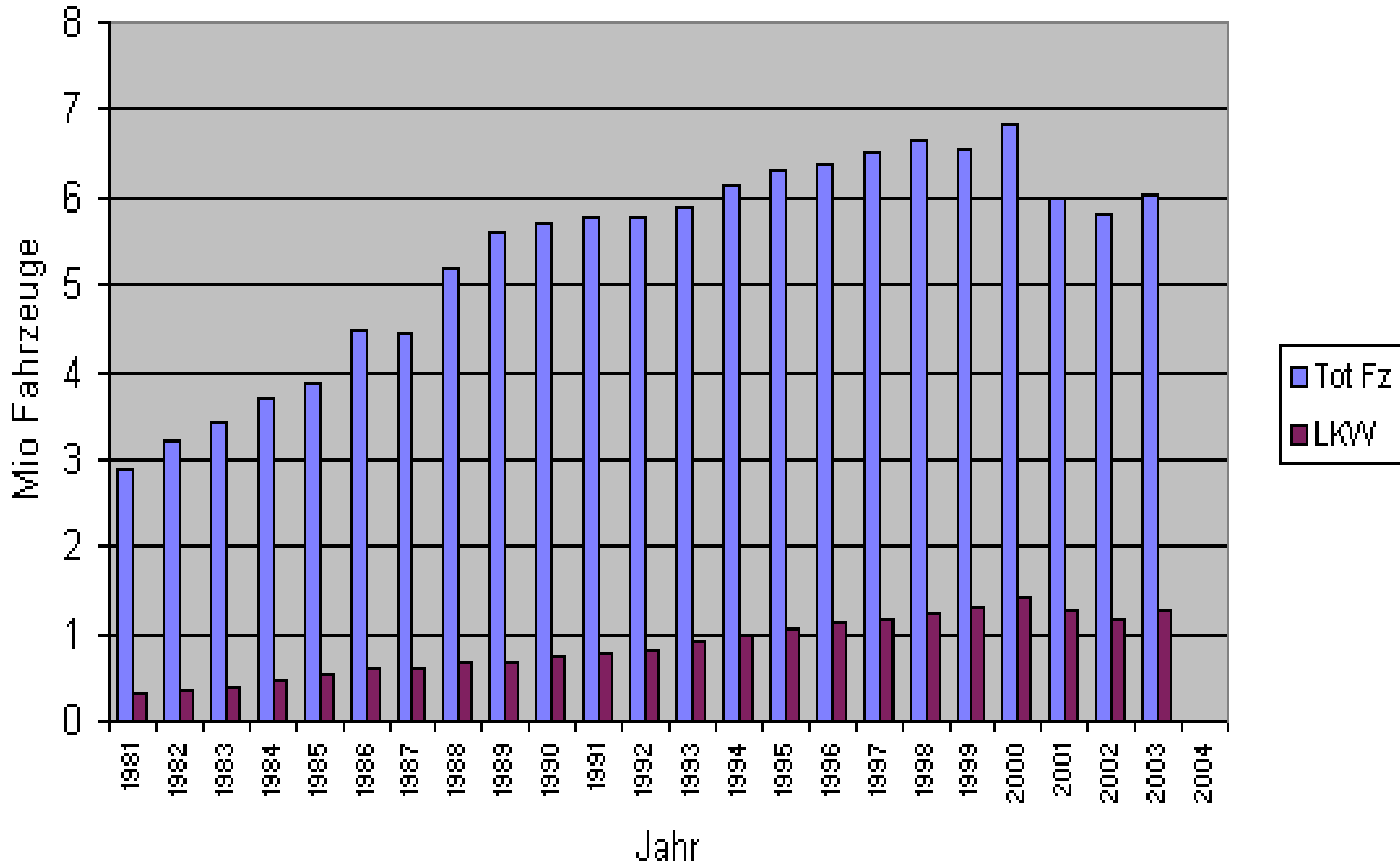


WIM in Gotthard tunnel



Gesamtverkehr Gotthard-Strassentunnel 1981 - 2004

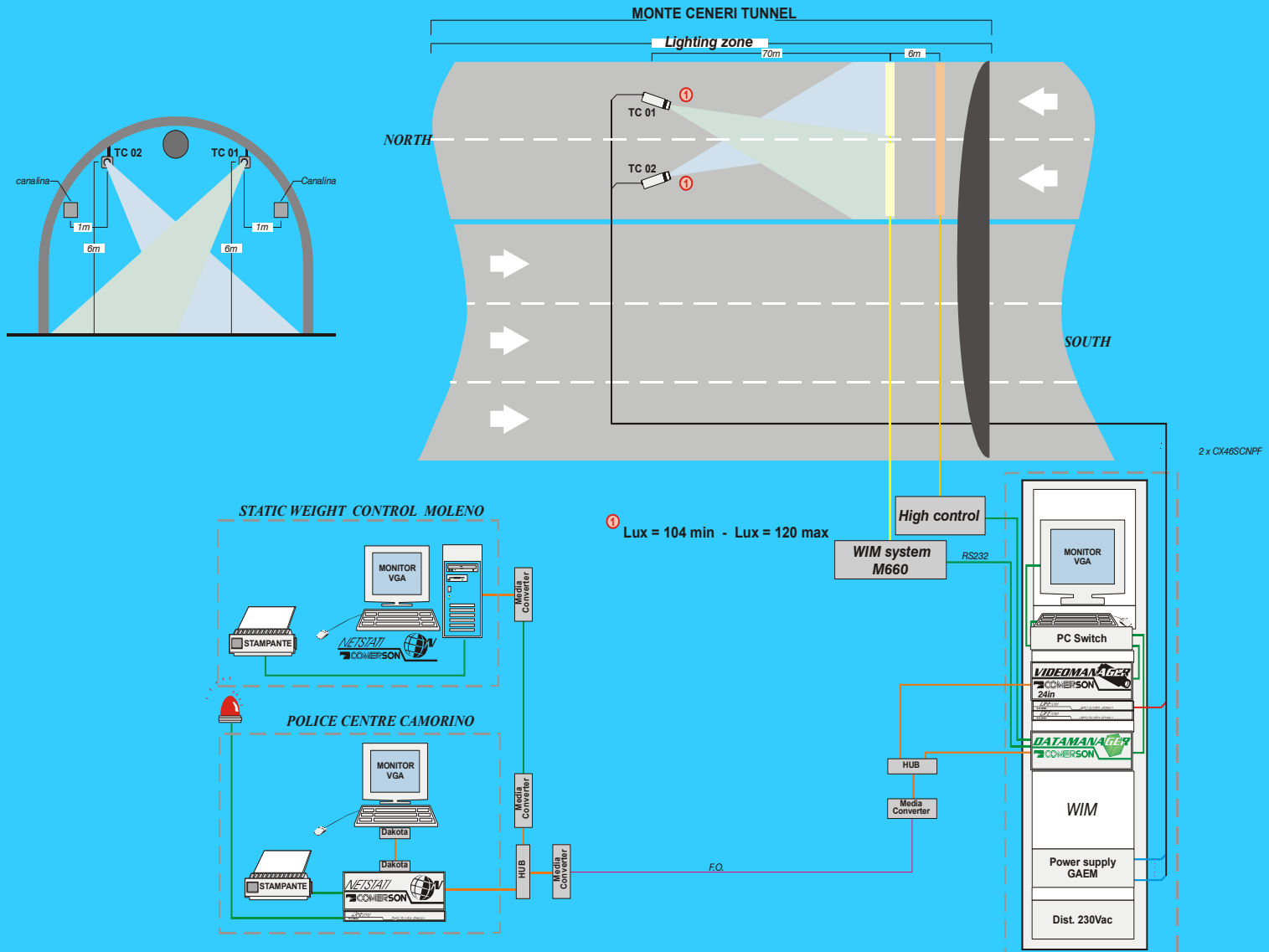
Annual Traffic Volume Gotthard



WIM System Requirements

- On-line acquisition of axle loads and GVW informations of passing vehicles
- Check the axle and GVW loading for violations
- Acquire video data of violators
- Transmit all data to a remote user (police, static scale)
- Archive all vehicle data for other purposes

Remote System HW Design



WIM System in Monte Ceneri Tunnel



WIM System Requirements

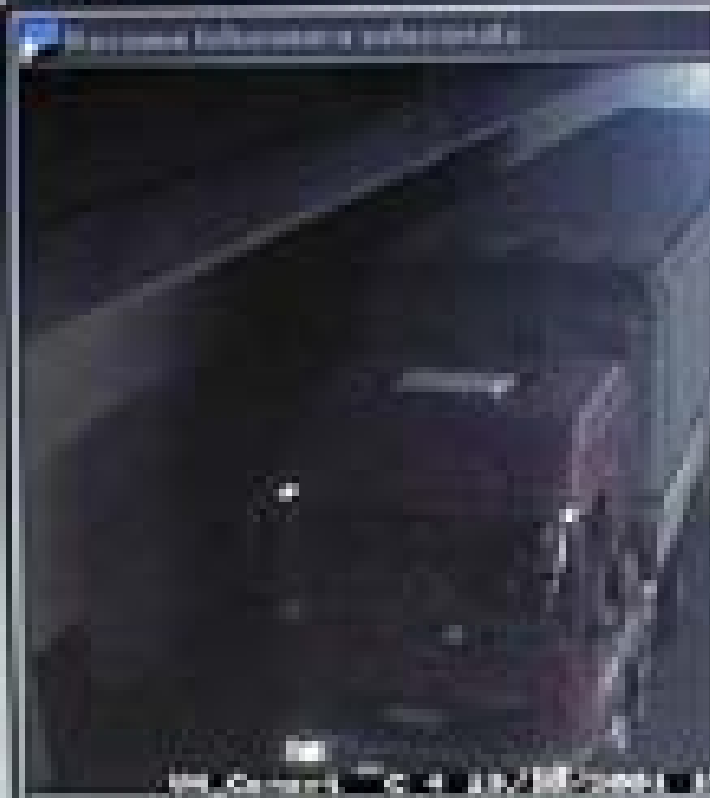
- Weight-, length-, speed data, vehicle classification, video sequence of traffic stream
- Data processing to estimate vehicle violation
- Transmit data to remote system
- Transfer of picture and violation data to static scale

Remote User Interface Police Operator

Police Operator



Video Data of Violators



VIDEOMANAGER



VIDEOMANAGER



Name	Type/Protocol	From/Host	IP	Date	Time	Log	File
Camera 1	WebStorage_TM	Cam1Host	1	10/10/2001	10:10:54	201	Cam1-10/10/01 Per: 10000 Type: 0 Asset: 100/1000/100
Camera 2	WebStorage_TM	Cam2Host	2	10/10/2001	10:10:57	201	Cam2-10/10/01 Per: 10000 Type: 0 Asset: 100/1000/100

Unmistakable Identification



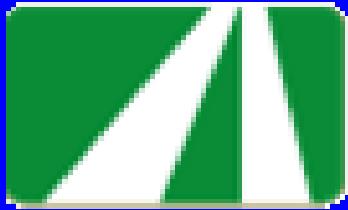
UM_Ceneri C 4 21/11/2001 11:46:04

Certified LS-WIM Scale



- Violators selected by WIM Station & Video System

Swiss Federal Roads Authority



ASTRA
OFROU
USTRA
FEDRO

- road traffic safety
- automatic vehicle classification
- heavy goods transport portal
- signalling of alternative routes and diversions
- inventory of traffic control systems
- evaluation of dynamic weight measurements
WIM

Alpine Transit Future

Within the scope of its activities in the area of heavy goods traffic management, the ASTRA has set up a new Internet portal (www.truckinfo.ch) - informations are published every 15 minutes.

One of the main aims of this new site is to enable transport companies to optimally plan their routes with the aid of up-to-date traffic information, but it is also hoped that it will lead to more efficient utilisation of capacities in the area of transalpine freight transport.

Thank You for Your Attention

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