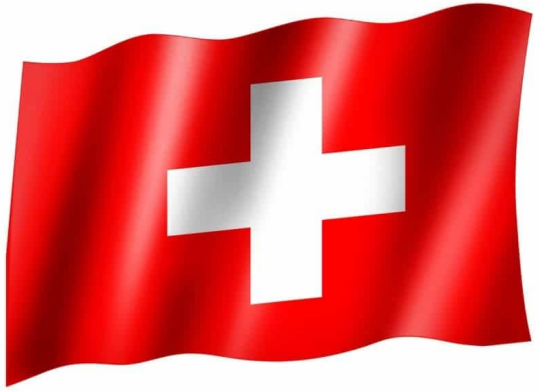
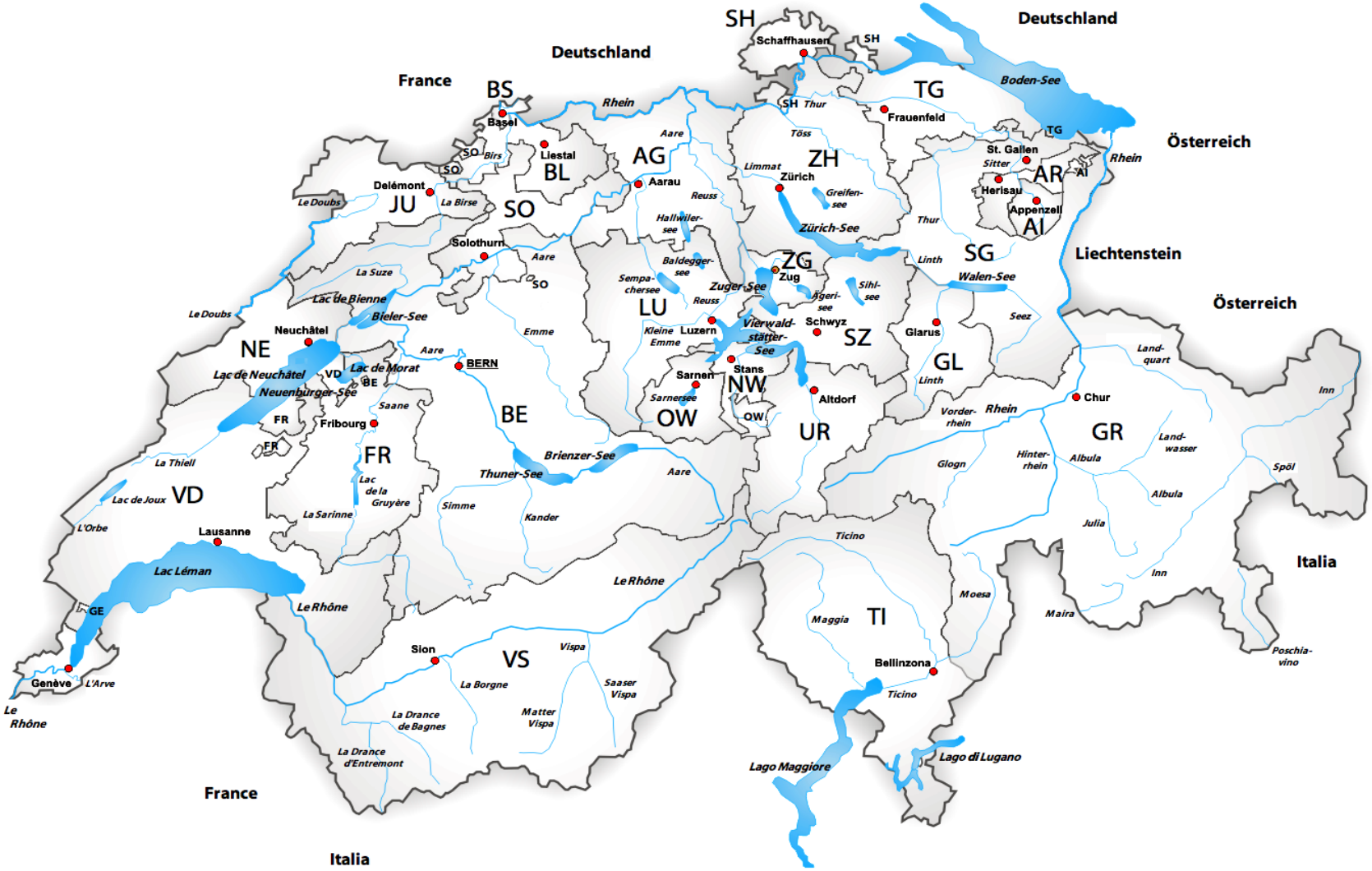
LSVA - Swiss Heavy Vehicle Fee

Towards to 3rd Generation - System Changeover from 2025



Switzerland

- Capital: Bern
- Biggest city: Zurich
- Population: 9 Mio
- 26 Cantons
- Road network: 84.868 km



LSVA

The Swiss performance-related heavy vehicle fee (LSVA) is a federal tax levied on the basis of total permissible weight, emission class and the distance driven on all roads in Switzerland and the principality of Liechtenstein.

LSVA must be paid for all vehicles and trailers which

- have a total weight > 3,5 tons and
- are used for the carriage of goods.

➔ LSVA exists since 1. January 2001

➔ LSVA is a Road User Charging scheme for heavy goods vehicles

➔ LSVA Revenues sum up to 1,7 BIO EUR per year, domestic share is ~70%

➔ The Road User Charger is the Swiss Federal Office for Customs and Border Security (Swiss Customs)

LSVA III

The third generation builds upon a market model for Service Providers

Non domestic Vehicle Owners

- can pay their fee through LSVA-certified EETS-Providers (since 2021, no changes),
- or can register and pay manually each trip through a Swiss Customs Webshop (from 1.4.2025).

Swiss Vehicle Owners

can choose between different types of LSVA-certified Service Providers (from 1.6.2025):

National ETS-Providers (NETS) -> for domestic users mainly driving within Switzerland

- NATRAS acts as a „bound service provider“ on behalf of the Federal Office for Customs and Border Security and offers free service providing incl. GNSS-OBUs to anyone (no selection).
- Certified National LSVA-providers: Different private companies offer paid service providing and are able to select their client base.

European ETS-Providers (EETS) -> for domestic users also driving internationally

- LSVA-certified EETS-Providers

LSVA III

What are the main system pillars?

Swiss Customs

Swiss Vehicle Owner

LSVA Charging

Non Domestic Vehicle Owner

EETS Provider

LSVA Invoice

3

Charge Assessment

Plausibilisation

Distance Calculation

Toll Invoice incl. LSVA

Vehicle Passage System

LSVA Service Providing

2

1

Detection, Classification & Identification

Owner & Vehicle Registration,
Weight & Emmission Class Declaration,
Road usage (GNSS positioning)

LSVA III – Distance Calculation

Migration to Service Provider Model

2001 - 2024

For non domestic vehicle owners ->
EETS (since 2021)

LSVA [illegible] Providers

For non domestic vehicle owners ->
LSVA terminals @ Swiss border crossings

declaration of driven distance and weight,
provided and operated by Swiss Customs

For Swiss vehicle owners ->
electronic emotach® for distance calculation

58.000 emotach (linked to the tachograph),
permanently installed in the vehicles,
provided and operated by Swiss Customs.

2025 -

LSVA-certified EETS Providers

Webshop trip registering & invoicing (only for occasional users)

National ETS Provider
for every Swiss vehicle owner based on GNSS-OBUs
offers free service providing on behalf of Swiss Customs

ZNA Additional LSVA-certified Service Providers,
based on GNSS-Services

LSVA III – Plausibilisation

Renewal and enlargement of Vehicle Passage System

2001 - 2024

DSRC Beacon & Terminal System @ Swiss border crossings

87 sites / 375 lanes / 163 terminals

Roadside Enforcement @ Swiss motorways

16 sites / 92 lanes

Mobile Enforcement Vehicles @ Swiss Customs districts

3 MOBKO vehicles for detection, classification, identification and manual verification

2025 -

Border Crossings Vehicle Passage System

- 87 sites / 375 lanes
- Vehicle Detection / Classification / ANPR Front-Identification

Roadside Vehicle Passage System

- Motorways: 38 sites / 219 lanes (22 new gantries)
- Secondary roads: 52 sites / 94 lanes (new poles)
- Vehicle Detection / Classification / ANPR Front & Rear Identification

Mobile Vehicle Passage System

- 30 cars equipped with portable equipment kits / roofbars
- More than 800 control points at Swiss road network
- Vehicle Detection / Classification / ANPR Front & Rear Identification

LSVA III – 3 Tenders issued by Swiss Customs

NETS	Establishment of a National Service Provider acting on behalf of Swiss Customs
ESTR	Renewal of Vehicle Passage System
DLME	Operation of Mobile Vehicle Passage System

NETS

Kapsch TrafficCom & AddSecure Group signed contracts by end of 2023.

Project execution takes place in a joint owned Swiss based company - NATRAS AG.

Controlled operation started by 1. January 25, full operation will start at 1. June 25

http://www.natras.ch

ESTR

Kapsch TrafficCom signed the contract in May 2024.

Project execution is ongoing and will be completed by end of 2025.

Operation of Mobile Vehicle Passage System started this year in March.

DLME

Swiss company VüCH won the tender in 2024.

Kapsch Traffic Com delivered the equipment for the mobile vehicle passage system.

Operation of the Mobile Vehicle Passage System started this year in March.

Thank you very much for your attention!

Thomas Reznicek

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Backup Slides

National Service Provider (NETS)

Project description

The project comprises the services of the National Service Provider (NETS) for the determination of the Swiss heavy goods vehicle charge (LSVA). The services will be performed by NATRAS AG, a 50/50 joint Venture of Kapsch and AddSecure located in Adliswil nearby Zurich. The primary task is to provide the basic services for the recording of the GPS driving data for Swiss heavy goods vehicles (>3.5t), as well as the services for delivery, administration and logistics of the on-board equipment (ESF).

The NATRAS services are essentially divided into three groups:

Customer service:
NATRAS operates the LSVA customer service for the Swiss heavy vehicle owners. The customer service includes an Online Service Portal that helps with the registration and administration of the ESF. Among other things, it also provides answers to frequently asked questions. The ordering, fault reporting and replacement of an ESF is carried out via the Online Service Portal in the required languages German, French, Italian and English. Furthermore, a special outage solution helps for subsequent data entry or modification. A telephone hotline also ensures personal support for the freighters.

Vehicle equipment:
NATRAS provides the on-board equipment and the associated basic processes, such as vehicle registration, ESF delivery, change of freighter, ESF recovery, the removal and reinstatement of the vehicle. It must be possible to register every Swiss vehicle subject to LSVA with NATRAS for the recording of driving data. Foreign owners can register their vehicles at NATRAS only after they have been granted allowance from the FOCBS.

Distance Calculation:
Up to 55.000 GNSS-OBUs (ESF) determine the waypoints using GNSS localisation, record the parameters for trailer type or registration/deregistration and its declared total weight. It transmits this driving data via the mobile communication network to the back office / IT system of NATRAS. There, the journey data is quality-assured, processed and then transferred to the FOCBS for assessment and invoicing.

Vehicle Passage System (ESTR)

Project description

The Vehicle Passage System (ESTR) is used to monitor the routes and right declaration of heavy goods vehicles on the road network. The ESTR is furthermore used for the automated control of other road charges (such as the PSVA for buses) and to support several vehicle enforcement tasks of Swiss authorities.

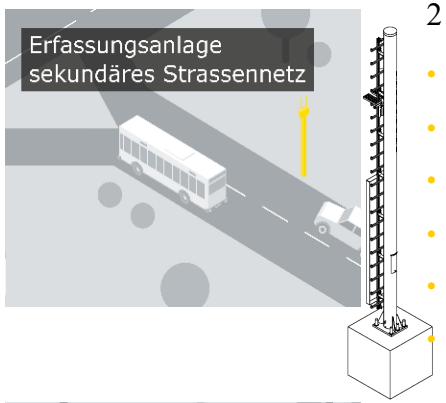
At Swiss border crossings, as well as within Switzerland on the 1st and 2nd class road network, vehicles will be recorded with video-sensor-systems with the place and time of passage, their numberplate, as well as their vehicle class. This recording process is supported by corresponding image material. The ESTR is supplemented by mobile vehicle passage systems mounted on vehicles, which can be used anywhere in Switzerland at any time. The capture data is then sent via the federal government's network to Swiss Customs (FOCBS) via the Post Processing Centre, located at the Swiss Federal Office of Information Technology (FOIT) in Bern.

The scope of supply of the ESTR project includes the entire system technology for 375 lanes at 89 locations of the Swiss border crossings, 313 lanes at 90 locations on the Swiss road network, as well as the equipment for 30 mobile recording units mounted on vehicles. The gantry-infrastructure for 74 road network sites will be completely new erected.

Vehicle Passage System (ESTR)

1st Class Roads (Motorways)

- Vehicle detection, classification and identification (front & rear ANPR) installed on steelgantries above the lanes.
- Stereoscopic video evaluation system for vehicle tracking and classification.
- Trainable and thus adaptable to changes in the vehicle classification scheme with high performance.
- Coverage of up to three lanes with a single device. Overlapping lane geometries.
- duplicated station controllers provide full redundancy across the entire site (both directions of travel).



2nd Class Roads

- Vehicle detection, classification and identification (front & rear ANPR), installed on poles next to the roadway.
- AI-based video evaluation system for vehicle tracking and classification.
- Trainable and thus adaptable to changes in the vehicle classification scheme with high performance.
- Both directions of travel are detected simultaneously with a single front-rear system.
- Lean and visually barely noticeable infrastructure, as only one pole with two VRX cameras is erected at the edge of the road to cover up to three lanes.
- no extra controller cabinet is required for operation.

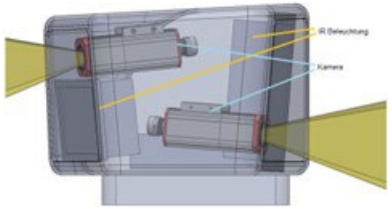
Border Crossings

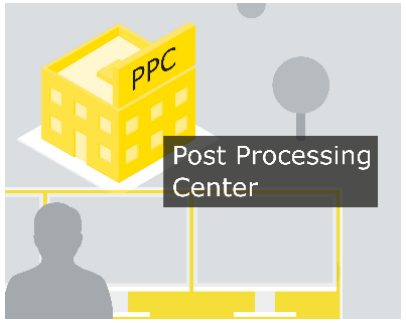
- Vehicle detection, classification and identification (Front ANPR) from the edge of the lane (single & multi-lane configuration possible).
- AI-based video evaluation system for vehicle tracking and classification.
- Classification scheme that can be trained and thus adapted to changes in the vehicle population.
- Existing assembly infrastructure at the border installations will continue to be used.

Vehicle Passage System (ESTR)

Portable Systems for cars

- Vehicle detection, classification and identification (Front & Rear ANPR)
- Automotive-grade on-board controller & stable control panel for personnel
- Energy-saving battery operation with exchangeable batteries
- The vehicle is parked at the edge of the road, both directions of travel are detected with one system.
- Flexible use on the entire road network.





Post Processing Center

- Application software platform for processing and submitting large amounts of data.
- Easily adaptable, configurable and expandable to the requirements.
- Installed at Swiss government cloud infrastructure
- Flexible interfaces for third-party systems
- Central access point for software rollout, remote troubleshooting, patching, monitoring & operations
- Meets all current data protection and cybersecurity standards.