

Interreg
Italia-Österreich

European Regional Development Fund



EUROPEAN UNION

SWEET

Single Window for ExcEptional Transport



The Single Window for Exceptional Transport



SWEET - the Single Window for Exceptional Transport project is a cross-border cooperation initiative between the Regions of Veneto, Friuli Venezia Giulia and Carinthia and is financed by the European Regional Development Fund and Interreg VA Italy-Austria 2014-2020.

SWEET aims to promote better governance of overloaded transport in the cross-border area and aims to disseminate an integrated mobility solution.



For this type of transport today, an authorization from the local authorities is required before carrying out overloaded transport by road. Rules and procedures vary from Member State to region to region and even from province to province, resulting in delays and difficulties for both transport companies and licensing authorities. The current regional tools in use in the regions of Veneto, Friuli Venezia Giulia and Carinthia are not interoperable and do not allow information sharing, as well as the need to improve the functionality of these tools.

Project objectives

The main objective is to develop a common solution taking into account the directives of the European Union and the requests of the operators.

The SWEET solution will enable access through a single portal (single window), based on interoperability with existing solutions, and implementation of new features to simplify the authorization process and provide real-time monitoring. Transport corridors will be defined in a clear and joint way, especially in border areas. A legal analysis will be carried out to harmonize and improve the logistics of overloaded transport. An overall reduction in time and costs for obtaining permits, greater safety and better governance of transport in the cross-border area is expected.

Project partners

Lead Partner (IT) Veneto Region

Directorate of Infrastructures and Transport

Project partner 1 (KAR) Universität Klagenfurt

Project partner 2 (VEN) Veneto Strade SpA

Project partner 3 (FVG) Friuli Venezia Giulia Strade SpA

Partners associated with the project

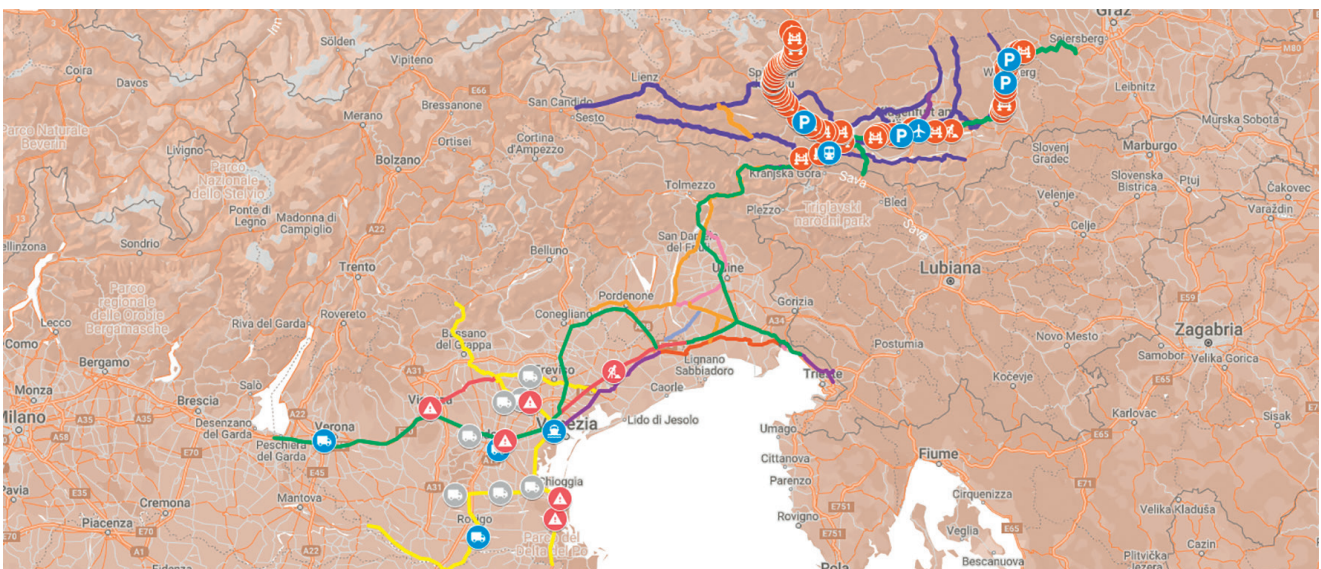
Carinthia Region, Autonomous Region of Friuli Venezia Giulia, Autovie Venete, ASFInAG, Carinthian Chamber of Commerce, EGTC Euregio Senza Confini.

Project budget

826.463,92 Euros

Duration

01.01.2020 - 31.12.2022

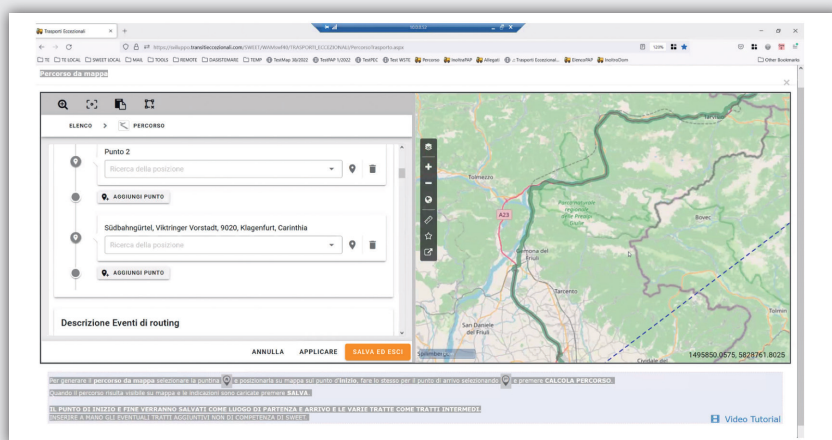


THE MAIN OBJECTIVES OF THE SWEET SOLUTION ARE THE FOLLOWING:

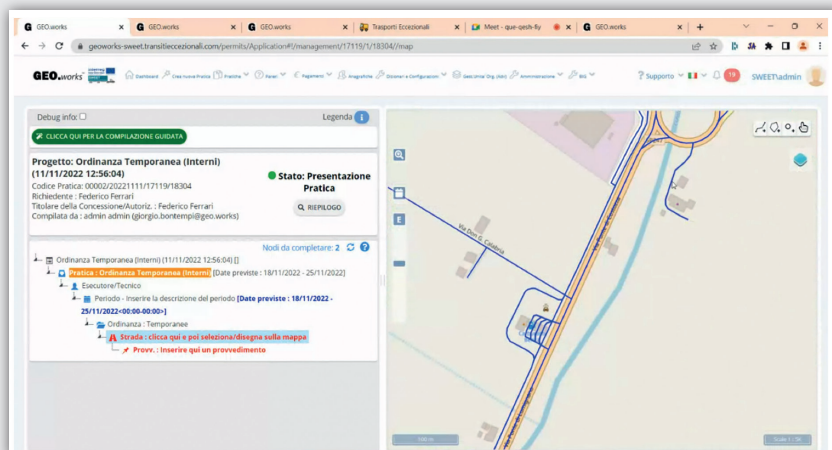
1. to provide a single access point to enter the authorization request in the geographical area of interest regardless the road operators, with integration of a trip planner;
2. to view the status of the file until authorization is obtained from all the operators involved;
3. to enter and display information on road bans and limitations (road ordinances);
4. to view the planning of all the overloaded Transport authorized in the geographical area of reference (regardless of the type of authorization), with the data associated with each transport;
5. to monitor overloaded transport;
6. to allow the exchange of information among the various operators involved;
7. to allow payment of the overloaded service in an integrated way.

THE ARCHITECTURE OF THE SWEET SYSTEM IS BASED ON THE FOLLOWING COMPONENTS:

- **Cloud-based control centre**, which can be accessed by the main users (road operators, transport operators, administrations, Police), where the SWEET application is available, and based on the following modules:
- **Authorization module**, for the integrated management of authorization practices in the field of overloaded transport in the Veneto Region, Friuli Venezia Giulia Region, and in Carinthia (Austria), through a one stop shop portal (single window), integrated with a trip planner, initially proposed on the basis of predefined corridors, able to easily select and modify a route, sending the request on the various portals present in the area, and showing the status of authorization progress; it also allows you to configure and update road data, corridors, and manage connected users;
- **Ordinance module**, to enter and modify the limitations and restrictions of bridges and roads, in a fully geographical mode, integrated with the trip planner, providing all the data necessary for routing calculation (e.g. lane restriction, prohibition of transit, alternating one-way), taking into account the dimensions and weights allowed for each road segment;



Authorization module ◀



▶ Ordinance module

- **Transport Monitoring module**, used to monitor the journey in real time and to verify compliance with the route defined in the authorization phase; the module allows to view the planning of authorized transports, with the visualization of the route performed.

- **Bridge monitoring module**, able to collect data from the sensors installed on the bridges and to provide alerts and useful data for recalculating the maximum load of the bridge; the module also allows you to monitor the weight of overloaded transport vehicles, and detect the license plate, and to verify compliance with the relative authorization.

- **For drivers of overloaded transport:** a mobile application, for Android devices, to start and end the journey, send support requests, and locate vehicles.

- **For inspectors (POLICE, others authorized):** a mobile application, for Android devices, for permission control.

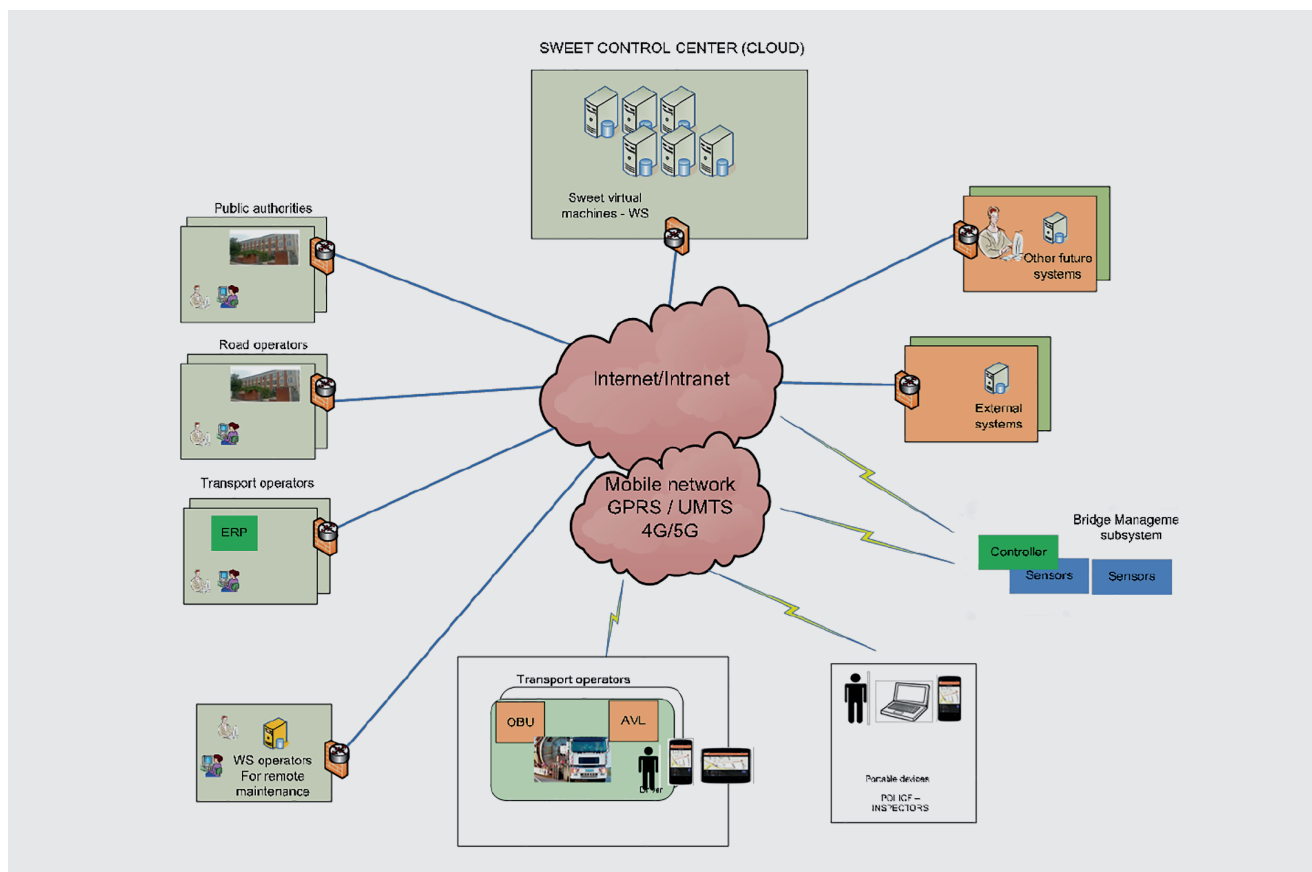
THE GEOGRAPHICAL AREA OF INTEREST IN WHICH THE SWEET SYSTEM IS OPERATIVE IS THE FOLLOWING:

- The Veneto Region and the Friuli Venezia Giulia Region, in Italy
- The Carinthia Region, in Austria

The SWEET System is interconnected with the various management systems of authorizations present in these areas, via web-services, for the automatic sending of data relating to the authorization phase, in particular with:

- a) the authorization system for overloaded transport of the Metropolitan City of Venice, which has various instances of the solution at Veneto Strade, the main provinces in the Veneto Region, and at Friuli Venezia Giulia Strade, in the Friuli Region; this integration will take place via web-services for the communication of data relating to the authorization phase;
- b) the SOTRA system, which manages requests for authorization of overloaded transport in Austria, managed by the Carinthian Chamber of Commerce.

The SWEET solution is open to integration with other road operators present in the same area and to extension in other geographical areas. The SWEET solution is made available in Italian, English and German. It also features a high guarantee of web access and data transmission security as well as the possibility for authorized operators to change the access password.



Authorization module

This module allows the integrated management of authorization practices for overloaded transport in the Veneto Region, Friuli Venezia Giulia Region, and in Carinthia (Austria); this module includes a one stop shop portal (single window) which allows to:

- submit the application, after registering the various operators involved;
- select the route (via trip planner);
- send the application to the various systems of the operators involved in the process, receive the relative confirmation with the prescriptions (through integration with existing authorization management systems);
- view the status of the authorizations in progress, for each operator, until all authorizations have been completed;
- modify the selected path, if not feasible;
- highlight the cost required for the authorization and obtain the authorization for the transport and transit of overloaded vehicles, in accordance with the legislation in force in Italy and Austria.

Through this module it is possible to insert and modify the main corridors, and modify the name of the owners associated with the road network.

Ordinance module

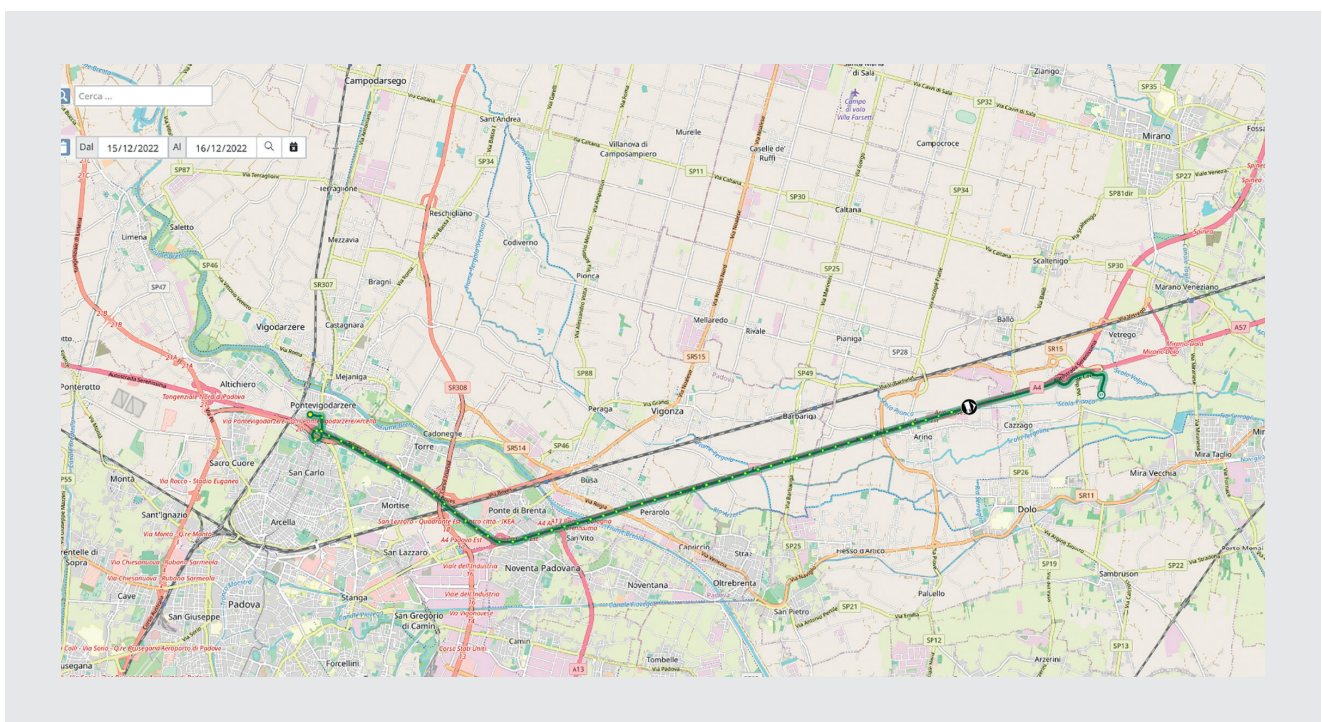
This module allows the management of temporary and permanent ordinances in a completely geographical mode. The user can enter the ordinance directly on the cartography, indicating the relative limitations in a geographical as well as textual way. The

traffic ordinance is structured per traffic measure and each ordinance contains all data necessary for the calculation of the routing (e.g. narrowing of the carriageway, traffic ban, alternating one-way (e.g. narrowing of carriageway, prohibition of traffic, alternating one-way traffic), in order to report the dimensions and weights permitted for each road arch; the ordinance management system allows you to manage the complete back office process, automatically reporting the measures applied by period on the cartography and managing the effective start and end date.

Monitoring module

This module allows to view and monitor trips already planned with some filters (by geographical area, reference period), and in particular to:

- show the overall route planned for each trip;
- collect the data of the routes taken for the authorized vehicles, with visualization on geographical maps of the vehicle position with respect to the planning (via the application on the driver's smartphone to detect the position of the vehicle);
- send a warning to the driver and to the central system in case of deviation from the planning (route, times and speed);
- provide information to the driver (via smartphone app, upon registration, with the possibility of selecting the assigned mission and transport, sending information on the start and end of the journey, sending indications of transport with or without load, navigation function, request for route deviation, communication request (eg in case of need and/or accident).



MONITORING ON BRIDGES AND VIADUCTS

The 'continuous' monitoring of bridges and viaducts will enrich a common database on the basis of real continuous monitoring, control and surveying concerning:

1. LOADS: use of dynamic weighing systems (WIM: weight in motion) in order to measure the load for each axle of a vehicle in transit in a given road section, the geometric configuration of the vehicle (distance between the axles, width, etc.) as well as the speed and position with respect to the roadway of the bridge.

2. STRUCTURE: continuous measurement - beyond a certain load threshold and with a pre-established frequency - of the deformations (usually of centesimal comparators), of the stress state (by means of strain gauges) and of the induced vibrations (with the use of accelerometers triaxial).

In the application-experimental context of the SWEET project regarding continuous monitoring, Friuli Venezia Giulia Strade SpA has contracted the supply and installation of a dynamic weighing system for vehicles, which when fully operational will allow for the continuous measurement of the masses transiting through a determined road section (2 lanes) of the viaduct located at approximately km 198+550 of the SS 13 "Pontebbana" in the Municipality of Pontebba (UD), automatically and without causing any slow-down/stop/diversion of vehicles in transit.

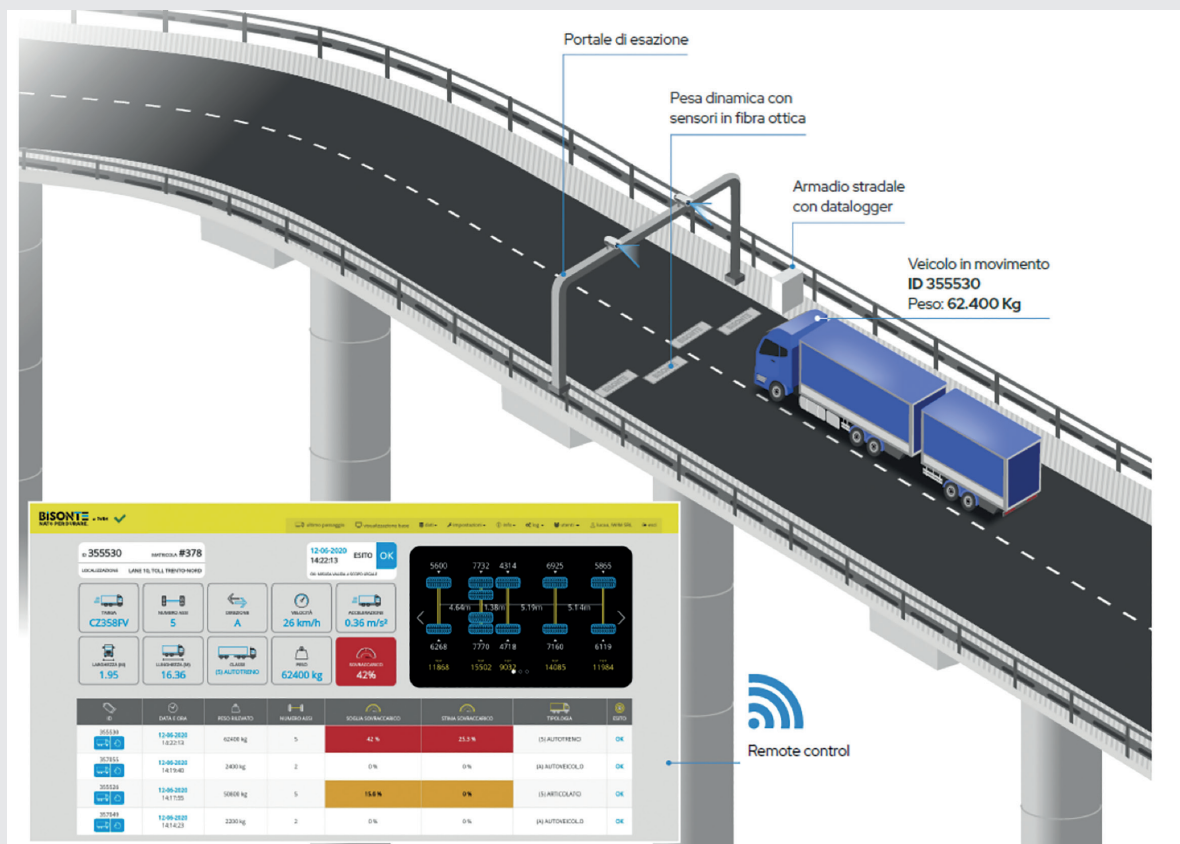
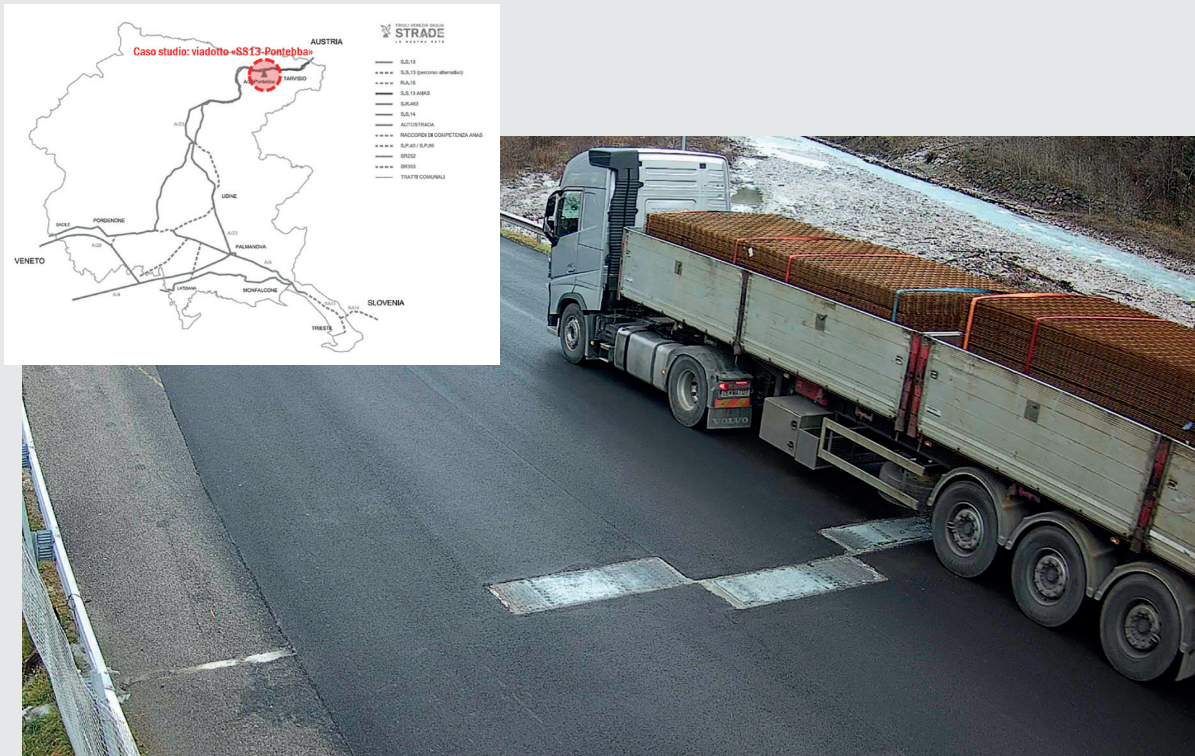
The architecture of the dynamic weighing system takes the form of a two-level system:

- **the first level** consists of the dynamic weighing system, including all the necessary civil and plant equipment;
- **the second level** consists of the acquisition and processing system of the signals detected on the road level; it will process them locally, producing as a result the measurement of the characteristics of the detected transit (in terms of masses, geometries, speeds, etc.) which will be digitally archived, making them available remotely (via web interface) in a specific database.

In conclusion, the previously described dynamic weighing system - the first to be installed on the regional road network - will make it possible to continuously detect the loads weighing on the individual axles of each vehicle in transit on the Pontebba viaduct (in addition to also detecting the characteristics geometry of the vehicle, speed, license plate, etc.), also making it possible to correlate the actions induced by vehicular transit with the structural response of the viaduct in terms of deformations, tensions and vibrations. The data will be acquired in a specific database and can be queried remotely at any time.

This **"integral" structural monitoring** (load side and structure side) - **among the first to be installed on the national road network** due to the degree of complexity and articulation of the data acquired - will prove to be a fundamental tool for deepening the level of knowledge on the state of conservation of the Pontebba viaduct which, together with the Pietratagliata viaduct, has peculiarities and engineering solutions worthy of the illustrious designer Eng. Silvano Zorzi.





Project partners



REGIONE DEL VENETO



Partners associated with the project

