4th ASECAP SUSTAINABILITY FORUM

15 December 2025
Rome, Italy

Hosted by Aiscat

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S*GATE

An innovative technical solution for open road tolling and sustainable mobility

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Agenda

- Addressing Open Road Tolling in existing Concessions
- Reducing the impact on the territory (sample CO_2 reduction estimation)
- Improving road safety
- Improving user experience
- S*Gate: innovation at first with an AI-powered ORT solution
- Further benefits of the solution: a scalable road-side technology
- Implementation roadmap 2025-2030

S*Gate – smart Open Road Tolling System

We aim to extend the Electronic toll collection system that obviates the need for toll booths or for vehicles to halt or reduce speed, to allow vehicles to be identified by their license plate or tag (the same used to pass through automatic lanes) and enables more dynamic toll collection methods, such as by distance traveled or different fees for different hours. Open Road Tolling offers benefits to users and the environment, without altering traffic flows, increasing safety levels and reducing polluting emissions from waiting and queuing vehicles.

A smoother travel experience and a more sustainable infrastructure.

Our IT & BR ORT roadmap: 1000+ km (2029)

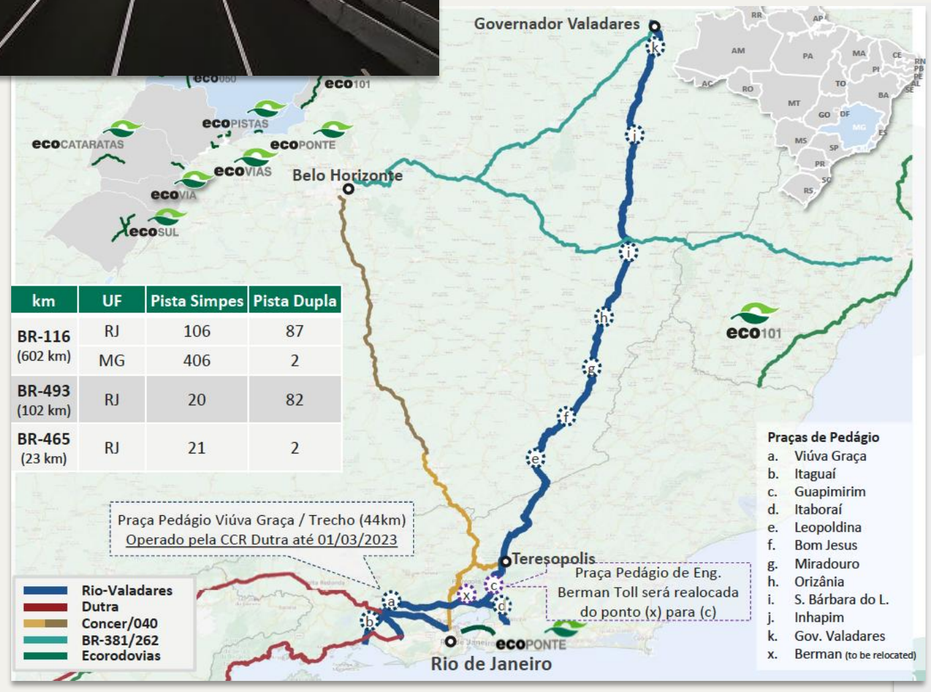
ecovias Noroeste Paulista

ecovias Raposo Castello

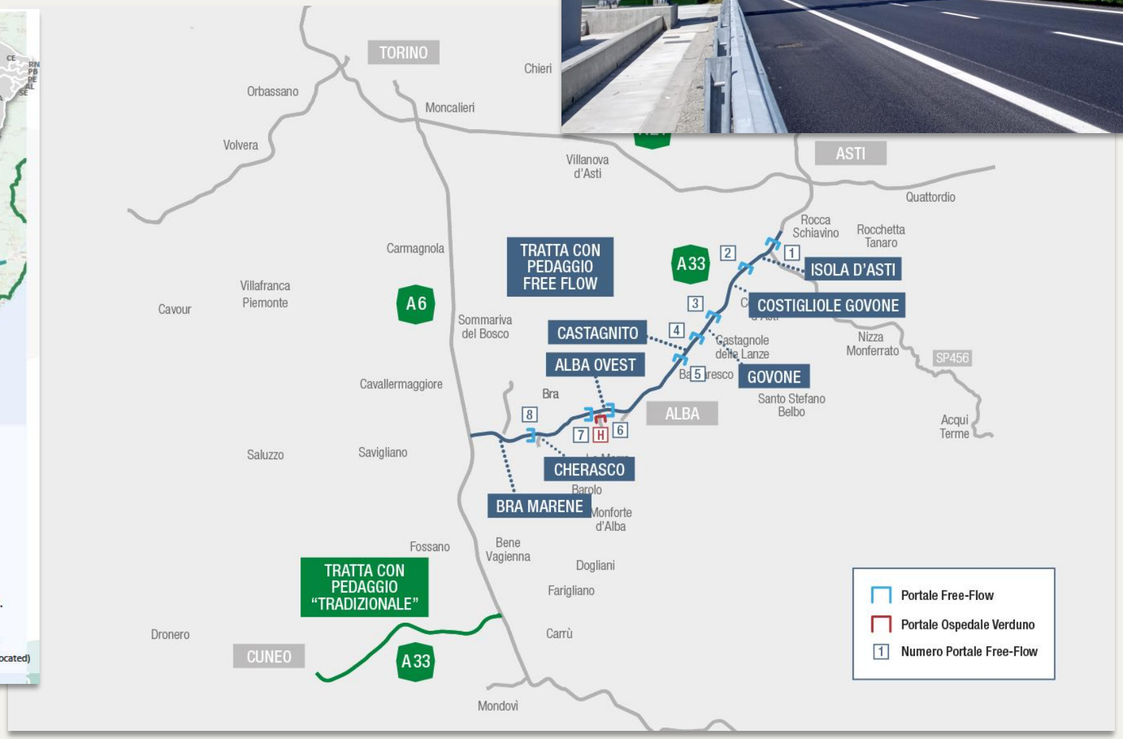
ecovias Rio Minas

A33 – Asti Cuneo

A21 – Autovia Padana

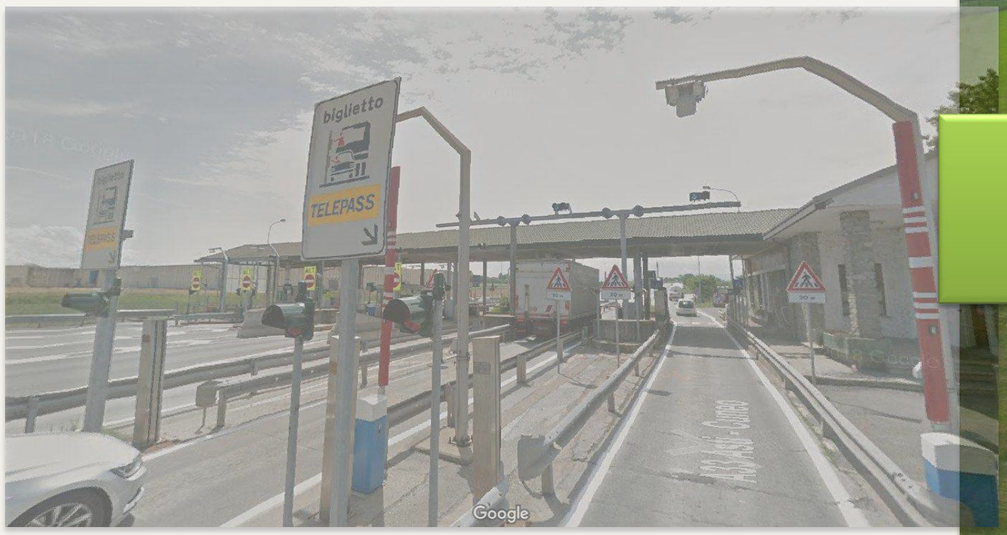


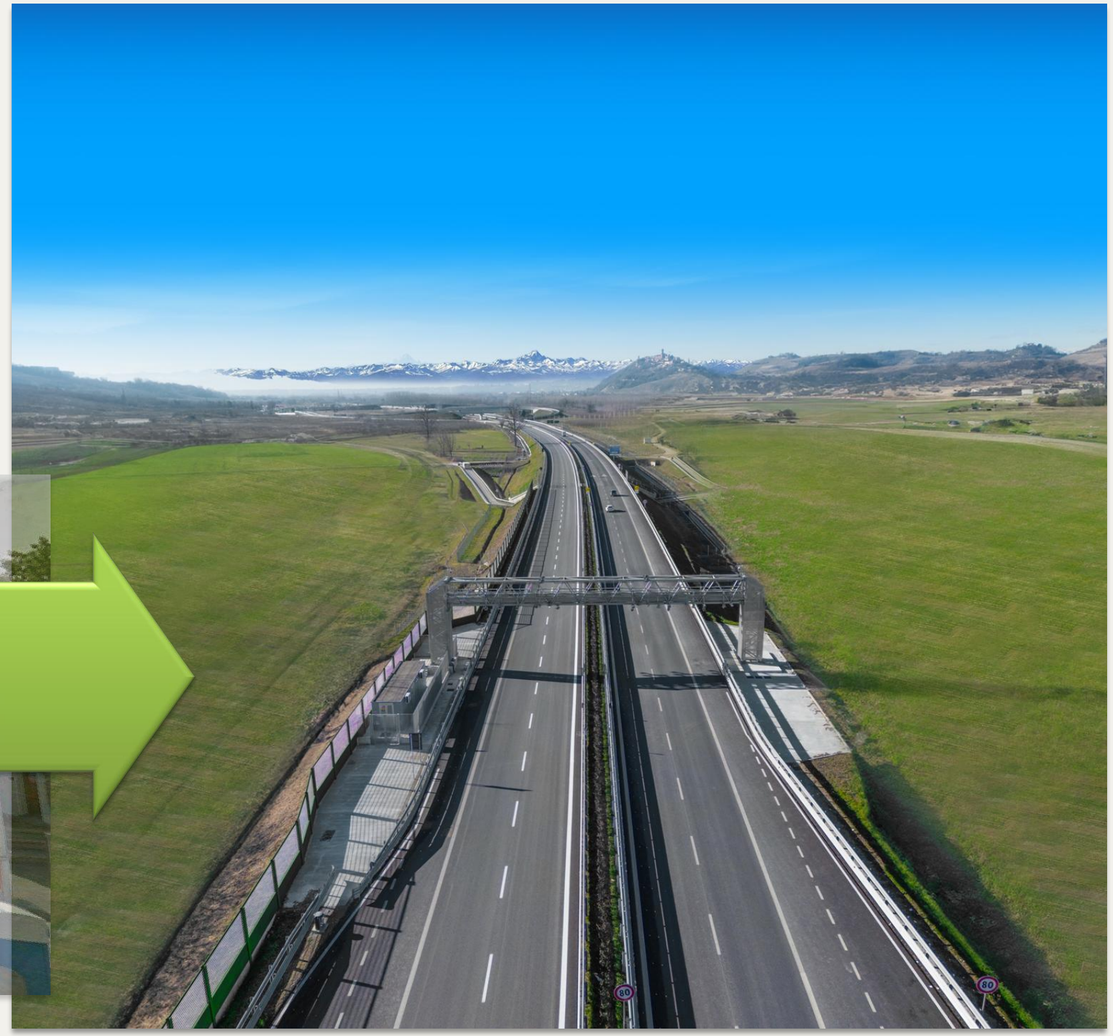
km	UF	Pista Simpes	Pista Dupla
BR-116 (602 km)	RJ	106	87
	MG	406	2
BR-493 (102 km)	RJ	20	82
BR-465 (23 km)	RJ	21	2



Sustainability first

Decommissioning of first toll plaza and activation of a corresponding ORT Gantry provided an **estimated reduction by 480 tons of CO_2** in the first year of operations, and no more queues.



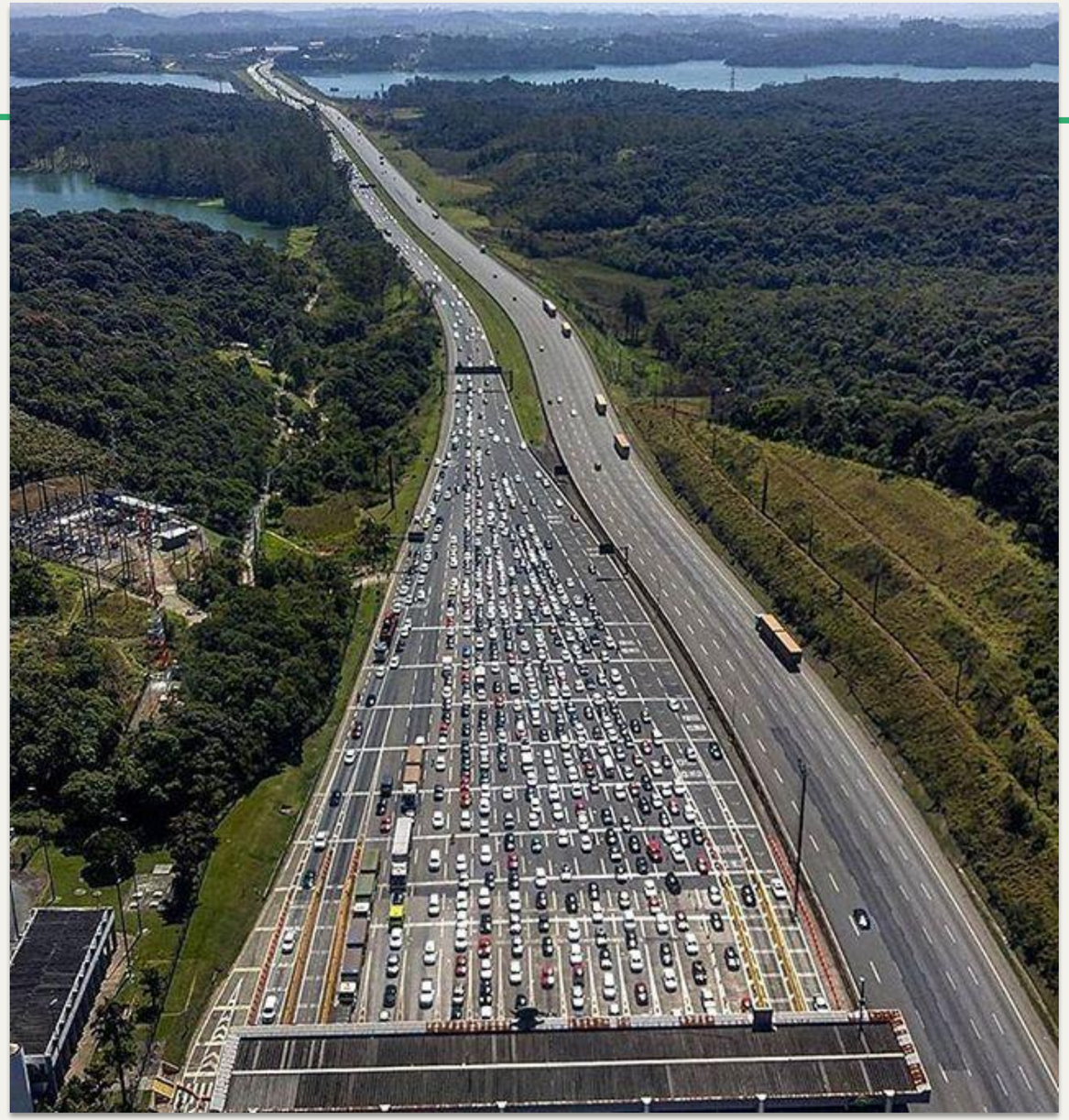


Congestion reduction

This is a typical situation in our Rodovias Imigrantes – Anchieta, connecting São Paulo with Santos, in Brazil, the largest South American city and the largest South American commercial port.

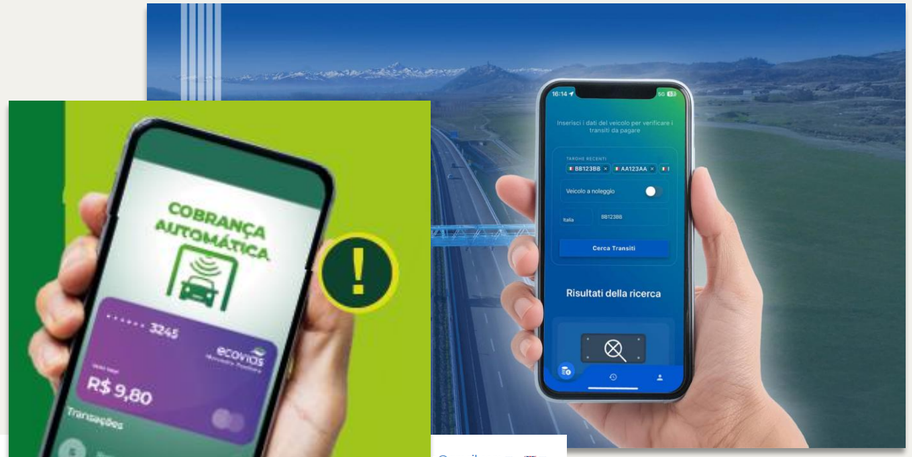
During weekends more than 1 million vehicles drive through its span, and a similar number of HGV travel over weekdays.

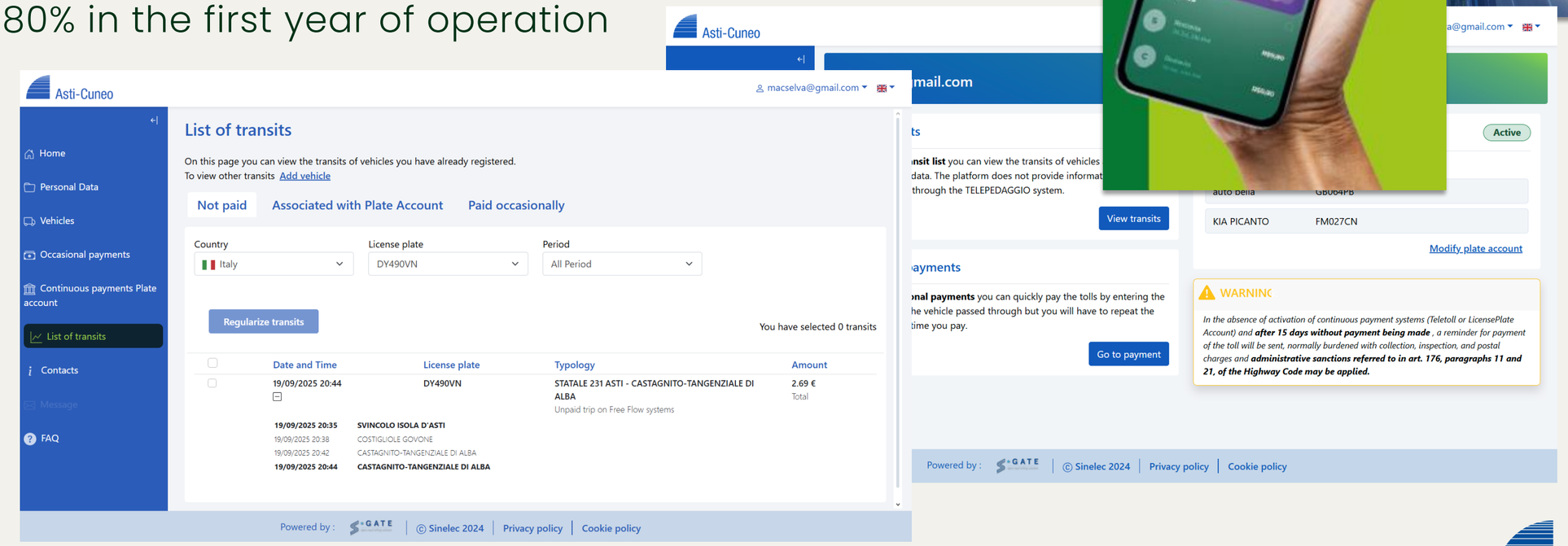
ASTM plans to remove the actual 4 plazas and implement a full ORT system, with real pay-per-use toll schema, significantly reducing congestions, accidents and greatly improving the user experience.



Seamless & friendly user experience

Moving to all electronic toll collection has proven to be effective and seamless for most of the users, with a significant adoption of mobile and electronic payments even where ETC penetration was less than 50% - A33 rose up to 80% in the first year of operation





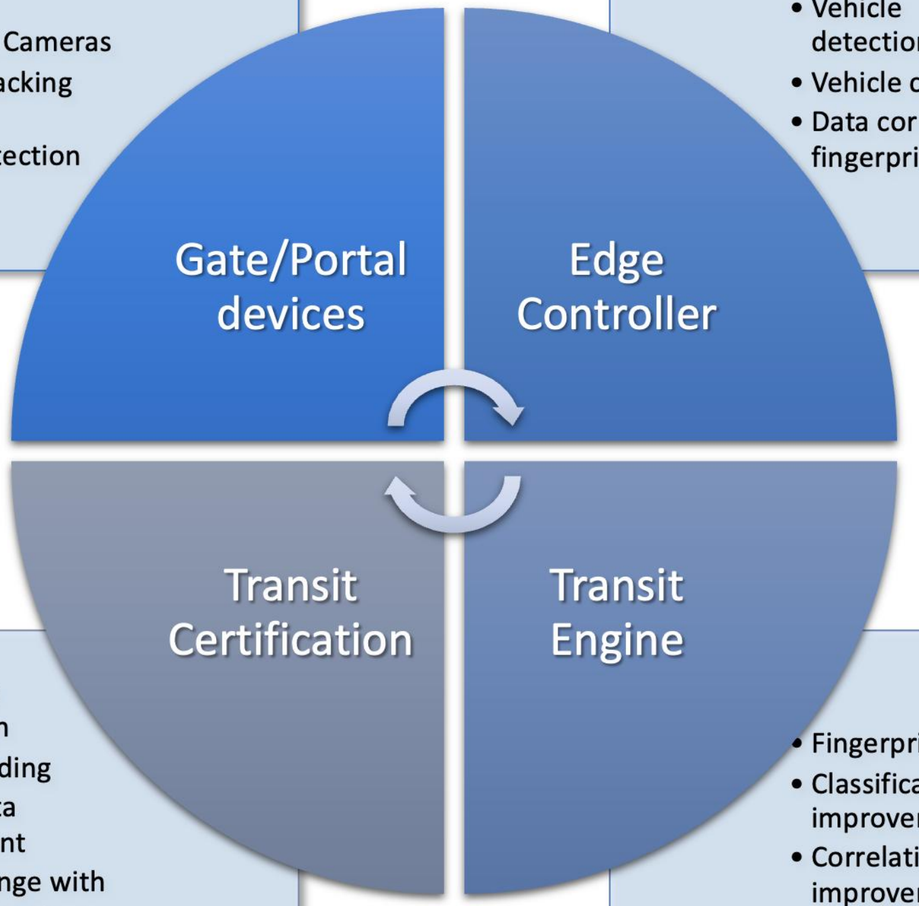
S*Gate innovative features

Machine Learning Engine can be further trained and improved to optimize device performance and data accuracy

AI Tools are adopted to evaluate transit building results and provide hints to improve edge performance to reduce errors

- ANPR/OCR Cameras
- Context/Tracking Cameras
- EFC Tag detection

- Vehicle detection/tracking
- Vehicle classification
- Data correlation: fingerprint building



- Fingerprint certification
- Transit building
- Orphan data management
- Data exchange with back-office system

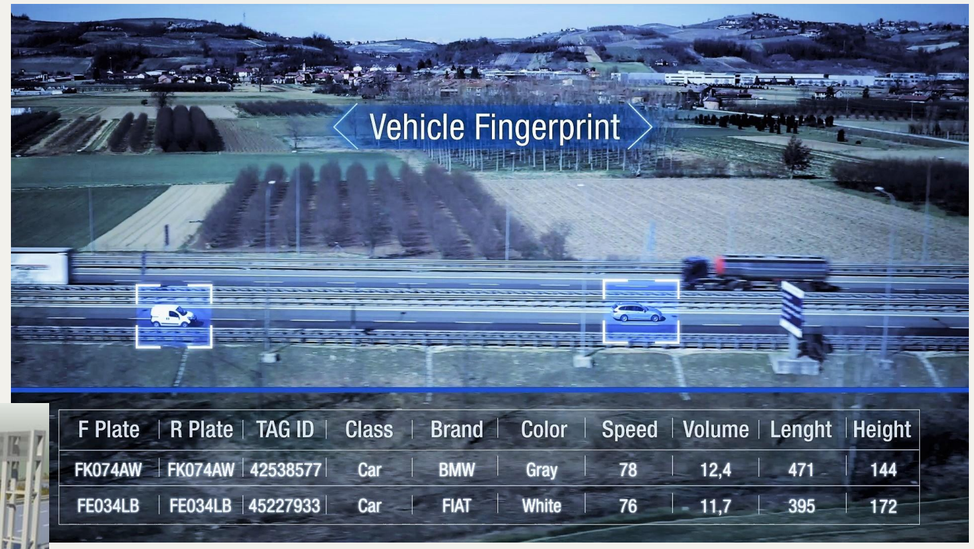
- Fingerprint analysis
- Classification improvement
- Correlation improvement

Machine Learning Engine analyzes real time video stream and allows the edge engine to track vehicle and correlate data

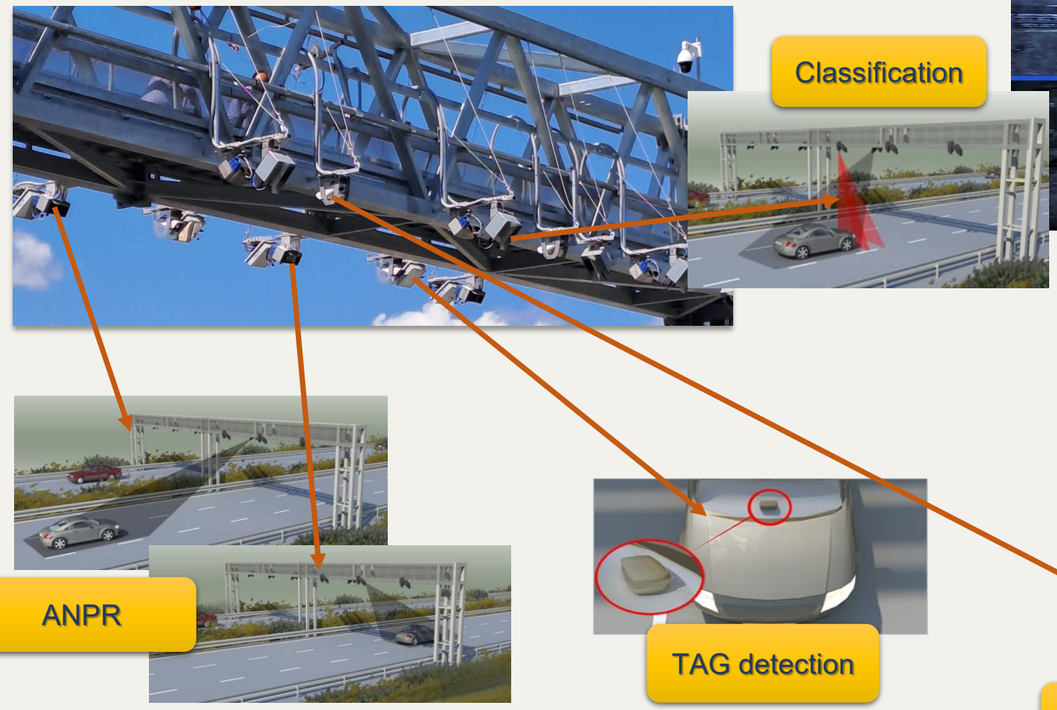
AI Tools are adopted to evaluate fingerprints effectiveness and provide automatic correction and data correlation improvement

AI-powered innovation

The innovation scope of S*GATE uses a combination of AI and 3D vehicle tracking applied to real-time video streams analysis, delivering the detection of the digital fingerprint of any transit.
This allows for a smart and effective improvement of vehicle detection and recognition along its highway journey.



F Plate	R Plate	TAG ID	Class	Brand	Color	Speed	Volume	Lenght	Height
FK074AW	FK074AW	42538577	Car	BMW	Gray	78	12,4	471	144
FE034LB	FE034LB	45227933	Car	FIAT	White	76	11,7	395	172



IT patent N. 102019000006648
US patent N. 2020/0356787 A1
Patent pending in Brazil and Gulf Council states

Scalable innovation: WIM & analytics

S*GATE architecture is based on Docker Micro-services, enabling a composable environment which can be adapted to many different applications, sharing the same core code:

Weight in Motion (**Libra/S**) is another key platform providing overweighting vehicles enforcement and road pavement damage estimation and detailed real traffic data analytics

Roadmap 2026-2030

A33 – Asti Cuneo	8 gantries +1 special purpose (local exemption)
A21 – Autovia Padana	10 gantries
ecovias Noroeste Paulista	12 gantries
ecovias Raposo Castello	32 gantries
ecovias Rio Minas	35 gantries
ecoRODOVIAS GRUPO	Proposal for 4 gantries in Rodovia Imigrantes

104 less toll plazas

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