12th ITS EUROPEAN CONGRESS
ITS BEYOND BORDERS
Strasbourg, France | 19-22 June 2017

A novel concept of “Low Emission Corridor” empowered by ITS: the BrennerLEC project

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The reasons beyond the project

… passing through unique environmental ecosystems, e.g. the Dolomites.

A22 highway:
strategic road gate on the SCAN-MED Corridor for the transport of goods and passengers between Italy and the North of Europe …

Source: European Commission

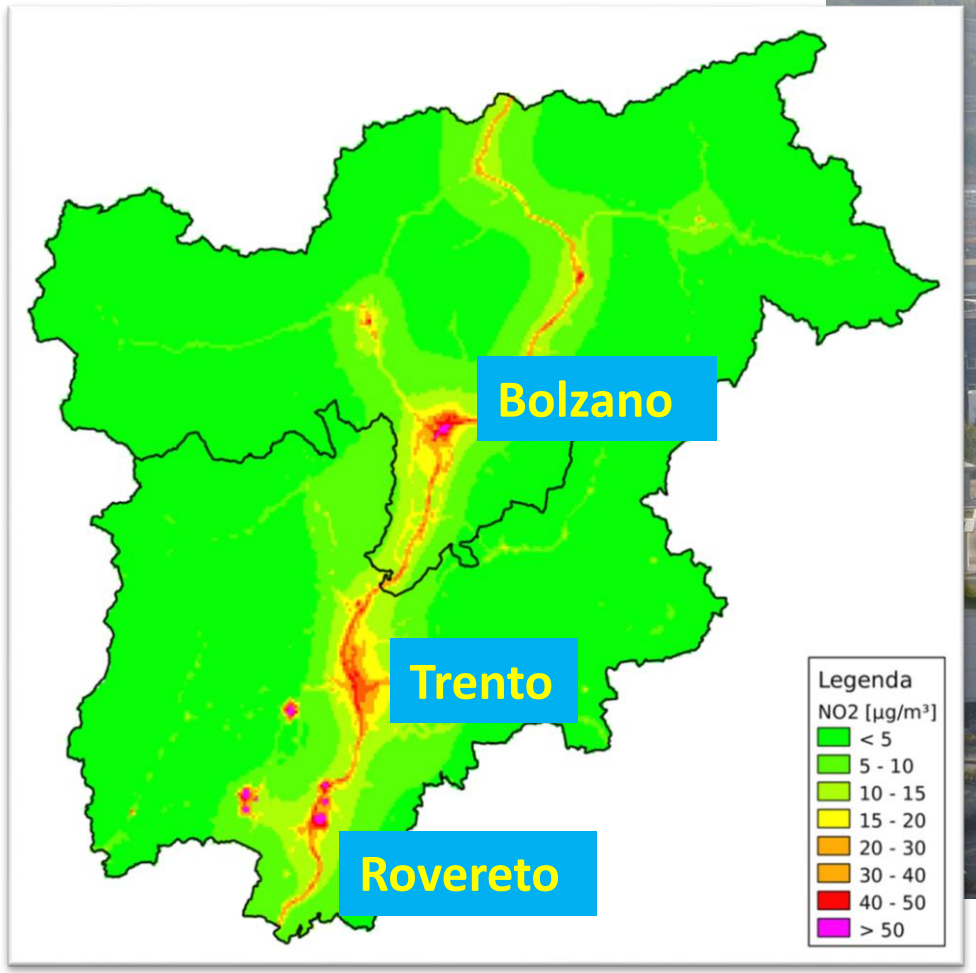
The reasons beyond the project

Trentino-South Tyrol

- **1** M inhabitants
- **7** M tourists / year

- **60%** of **NO_x** emissions produced by road traffic
  - ❑ ca. **40%** of which caused by the A22 **highway**

- Main exceedances of annual **NO_2** average law limits where the majority of inhabitants live



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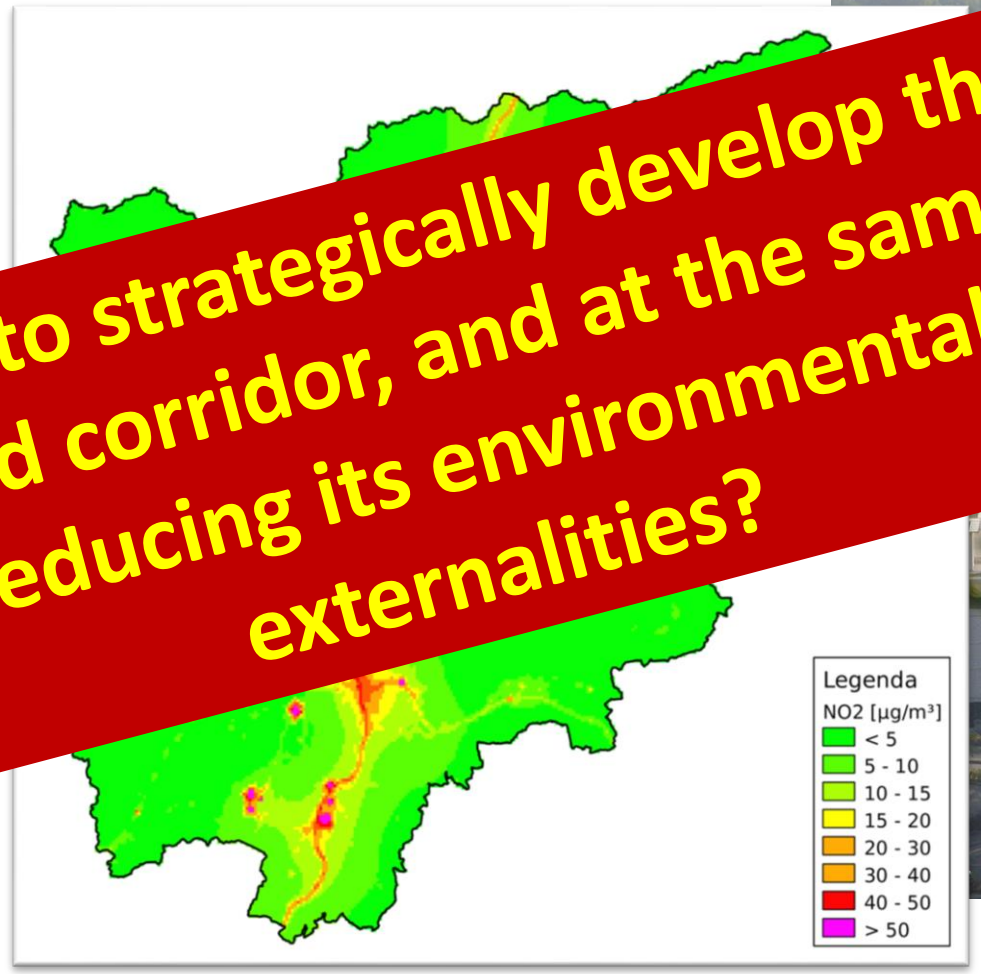
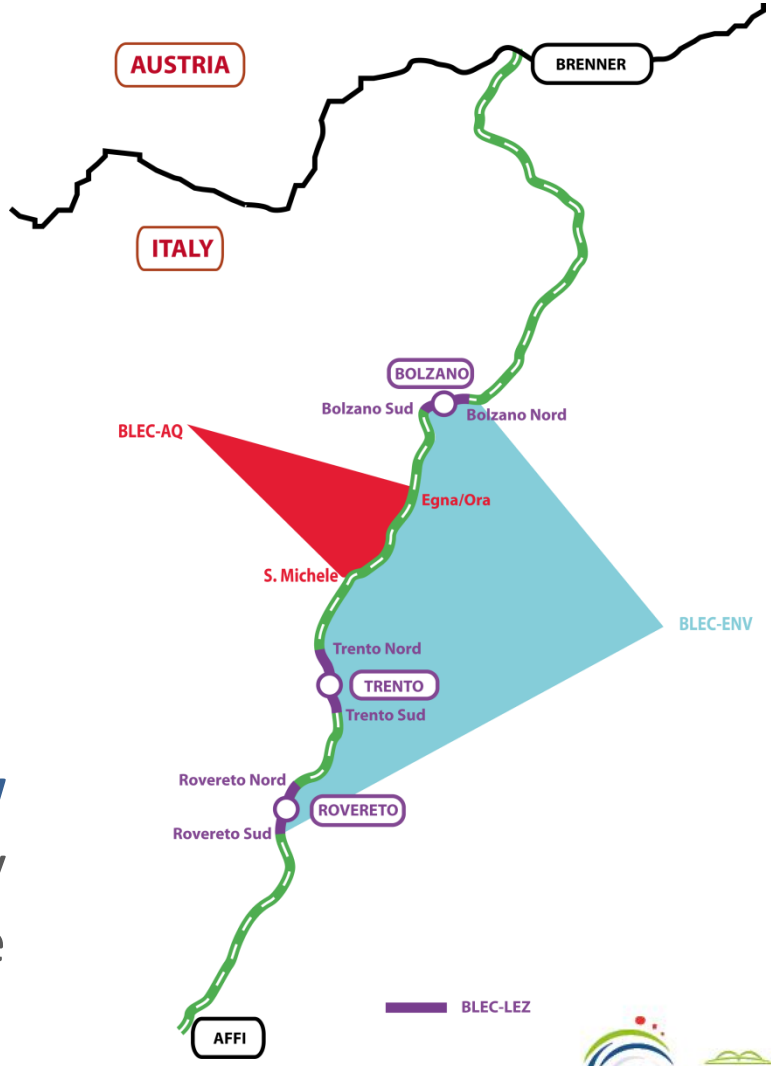
How to strategically develop this road corridor, and at the same reducing its environmental externalities?



The LIFE « BrennerLEC » project

Partners	A22 (coordinator) APPA - Provincia Autonoma di Bolzano APPA - Provincia Autonoma di Trento Università degli Studi di Trento CISMA IDM Südtirol / Alto Adige
Duration	01.09.2016 – 30.04.2021
Overall budget	€ 4.018.005
Eligible budget	€ 3.311.365
LIFE co-financing	€ 1.922.772 (approx. 60% of the eligible budget)

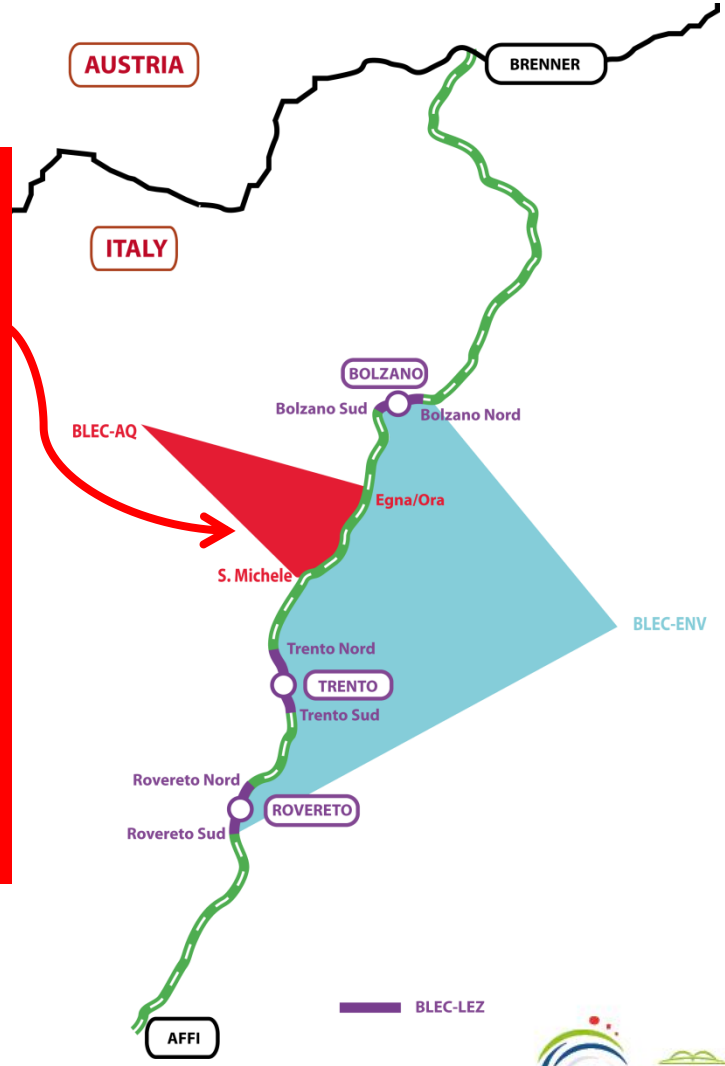


Main objective: develop and demonstrate a **«Low Emissions Corridor»** concept to be applied to the A22 by means of an **integrated set of dynamic policies** to manage traffic on the basis of a **proactive logic.**

The LIFE « BrennerLEC » project

Policy 1: Dynamic control triggered by air-pollution

- Dynamic reduction of **speed limits** as a function air quality concentrations
- Applied to **light vehicles** only
- Tested on a stretch of about 20 [km] (test area «BLEC-AQ»)
- Final goal: improve the state-of-art compromise between time in which limits are active and environmental benefit (Austrian experience: 60% of benefit during only 30% of the time with limits activated!)



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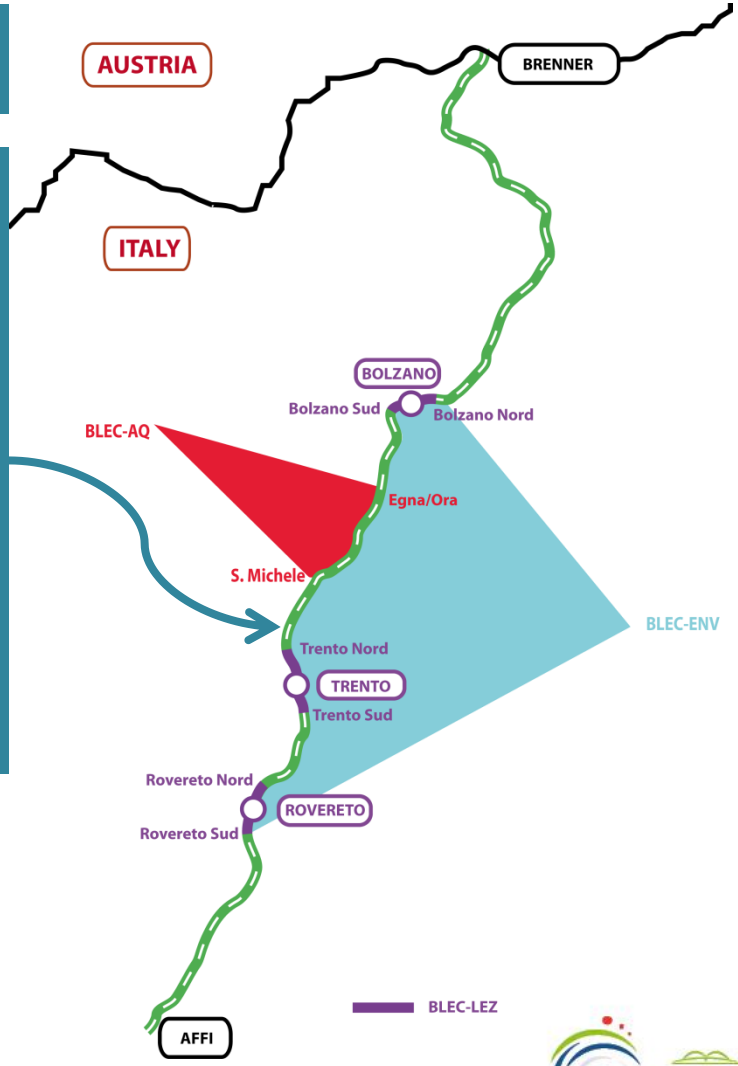
Policy 2: Dynamic control triggered by traffic

- Variable Speed Limits (VSL) and Hard Shoulder Running (HSR) as a function of traffic conditions
- Tested on a stretch of about 90 [km] (test area «BLEC-ENV»), only in direction south
- Final goal: find the best combination of VSL and HSR in order to maximize overall capacity and minimize stop&go phenomena, and associated emissions' peaks.



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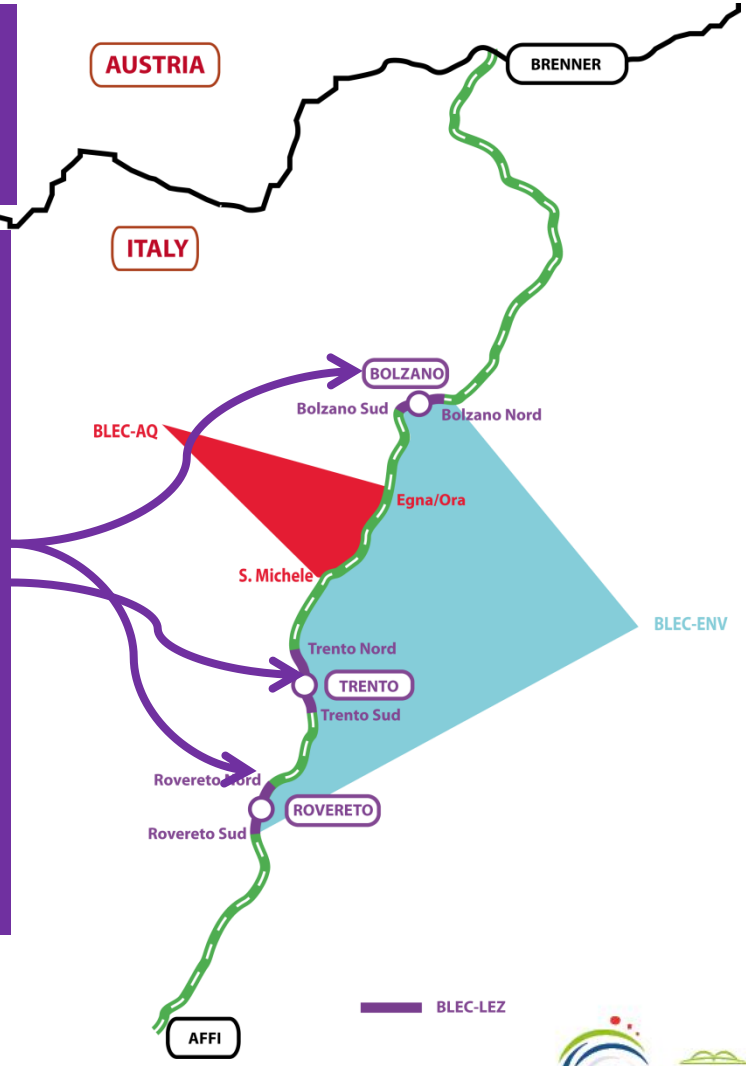
Policy 3: Integrated dynamic control triggered by traffic events / conditions

- Improved cooperation between TMC of A22 and other local TCCs / TICs with integrated usage of traveler information channels, in particular VMS.
- Tests in three pilot areas (test areas «BLEC-LEZ»): Bolzano, Trento and Rovereto
- Final goal: find the best modalities to distribute / re-route traffic with the goal of reducing the overall road emissions.



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	Phase 1 (Sep. 2016 – Feb.2018)	Phase 2 (Mar. 2018 – Feb 2019)	Phase 3 (Mar. 2019 – Sep. 2019)	Phase 4 (Oct. 2019 – Apr. 2021)
BLEC-AQ	Initial tests on reduced stretch without DSS	Extensive tests on complete stretch with DSS in testing mode	Intermediate tests with DSS in “reactive” mode	Final tests with DSS in “proactive” mode
BLEC-ENV	Initial tests on reduced stretch without DSS	Extensive tests on complete stretch with DSS in testing mode		Final tests with DSS in “proactive” mode
BLEC-LEZ	Initial tests based on better coordination of existing traffic management procedures	Extensive tests based on completed interfacing between traffic management centers and DSS in testing mode		Final tests focused on joint minimization of environmental impact of transit traffic through urban areas

From initial simple tests aiming to collect data and understand potential improvements…

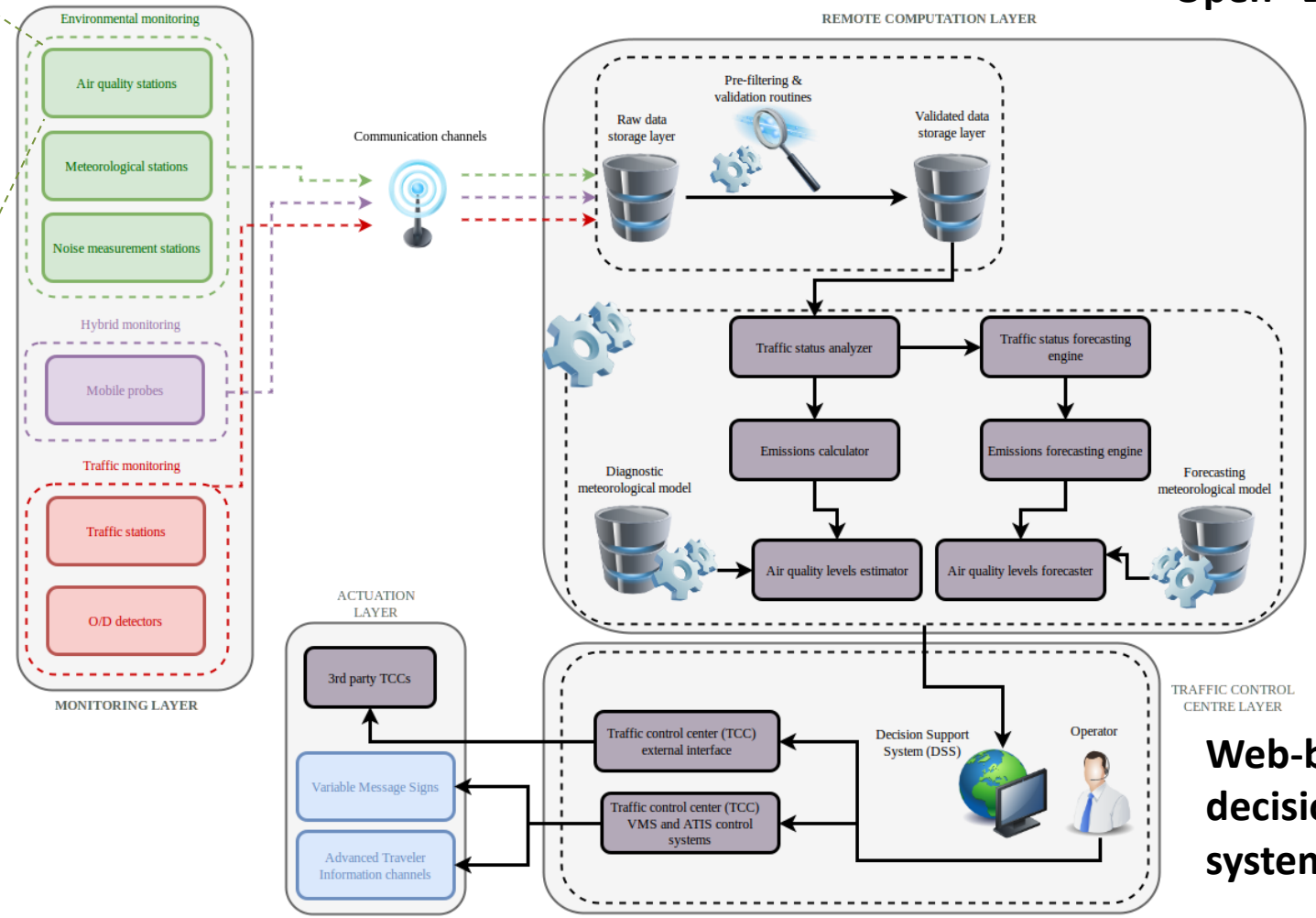
… to advanced policies supported by a large use of ITS technologies

The LIFE « BrennerLEC » project

Reference AQ stations

Innovative sensors

Open “Big data hub” platform



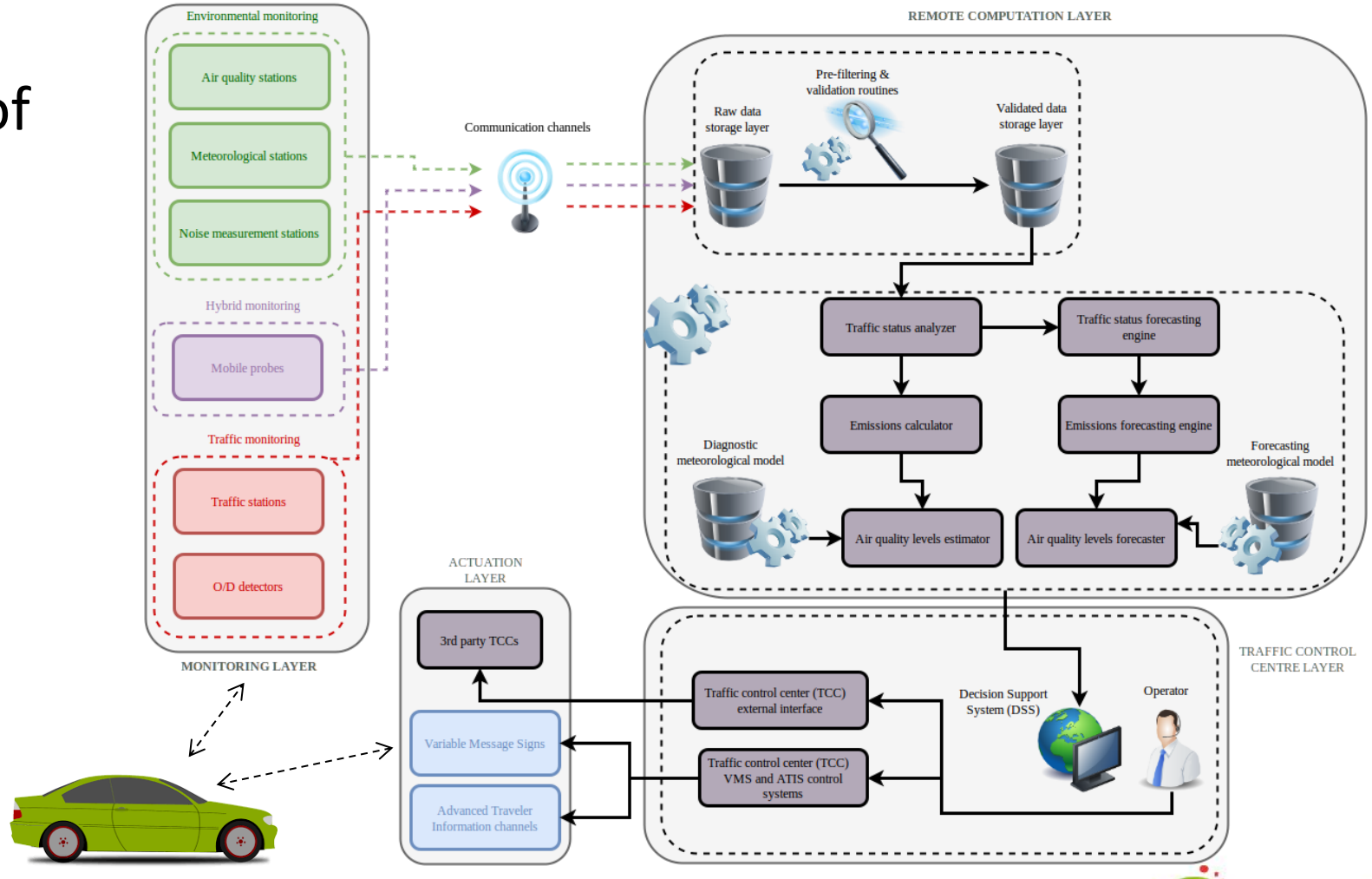
Complex traffic / environmental modeling chain

Web-based decision support system

Link to C-ITS initiatives of A22

Architecture thought to capitalize the opportunity of the advent of **CAVs** e.g. through initiatives such as **C-ROADS Italy**.

Full consistency with **C-ITS Day 1 / Day 1.5 services**, above all **signage applications**.



A final glance to possible FAQs

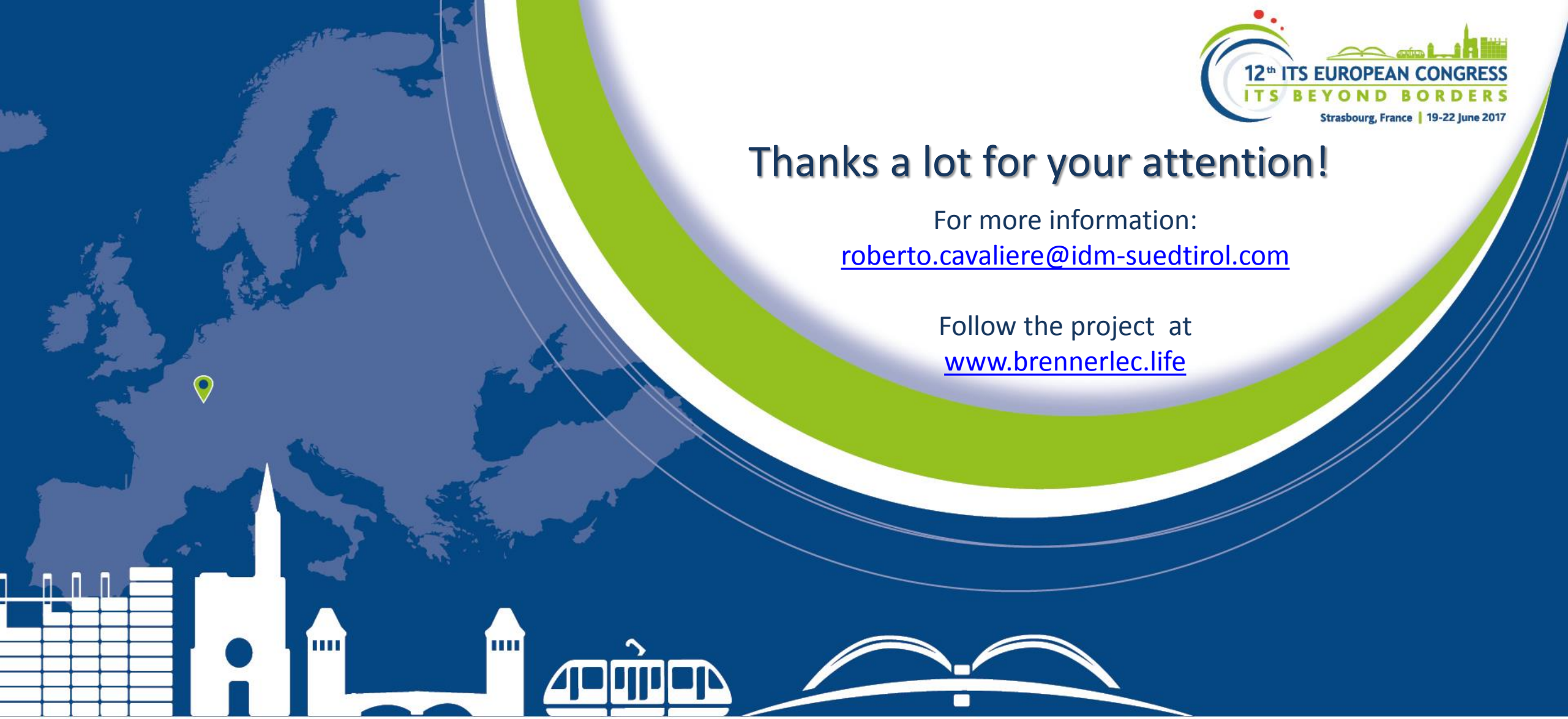
How will we manage full respect of VSL?

This is going to be the main challenge of the project… Italians are not used to drive with VSL (BrennerLEC's policies are the first pilot experiment in Italy)! Our intention is to follow a **stick and carrot** approach:

- **Reward drivers that respect limits**, e.g. through gamification
- **Penalize drivers that do not respect limits**, e.g. through section control enforcement systems

How will we evaluate the benefits of the tests?

By correlating several traffic / meteorological / air quality data through a dense monitoring network. Benefits' assessment is going to be done not only on a **temporal basis** (test vs no tests periods) but also on **spatial basis** (similar stretches with tests and no tests in action).



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Thanks a lot for your attention!

For more information:
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Follow the project at
www.brennerlec.life

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