



**HAL**  
open science

# Tradable credit scheme: an alternative to license plate rationing and congestion pricing to foster modal shift

Louis Balzer, Ludovic Leclercq

## ► To cite this version:

Louis Balzer, Ludovic Leclercq. Tradable credit scheme: an alternative to license plate rationing and congestion pricing to foster modal shift. TRA2022, 2022, Lisbonne, Portugal. hal-04662246

**HAL Id: hal-04662246**

**<https://hal.science/hal-04662246>**

Submitted on 25 Jul 2024

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# Tradable credit scheme: an alternative to license plate rationing and congestion pricing to foster modal shift

## Congestion, mode choice, and credits

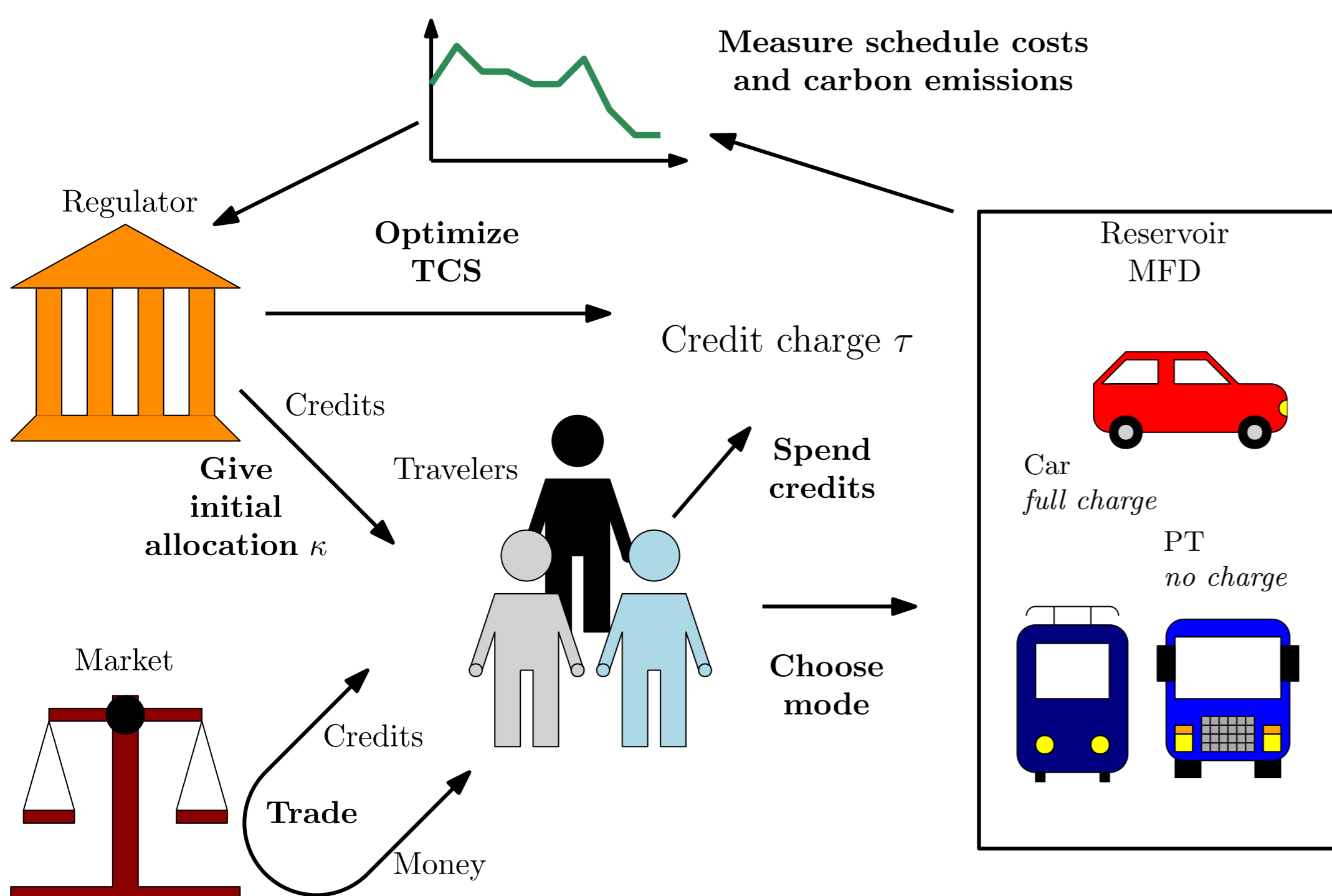
Reduce **congestion** and **pollution** by fostering Public Transportation (PT) ridership with Demand Management Schemes (DMS).

**Tradable Credit Scheme (TCS):** travelers get an initial allocation of credits for free from the regulator. They can use them to drive their car or trade the credits between themselves. The credit price is an output of the market. The regulator fixes the number of credits needed to drive a car for a day.

**License Plate Rationing (LPR):** a traveler can drive a car only every second day, and a part of the population is exempted.

**Congestion pricing:** a traveler needs to pay a fee to drive a car.

The congestion representation is based on the **Macroscopic Fundamental Diagram (MFD)**: the instantaneous mean speed is a function of the cars in the network. Account for congestion dynamics, trip heterogeneity, and low computation requirements.



## Case Study: Lyon, FR

Morning commute (7:00 to 10:00).

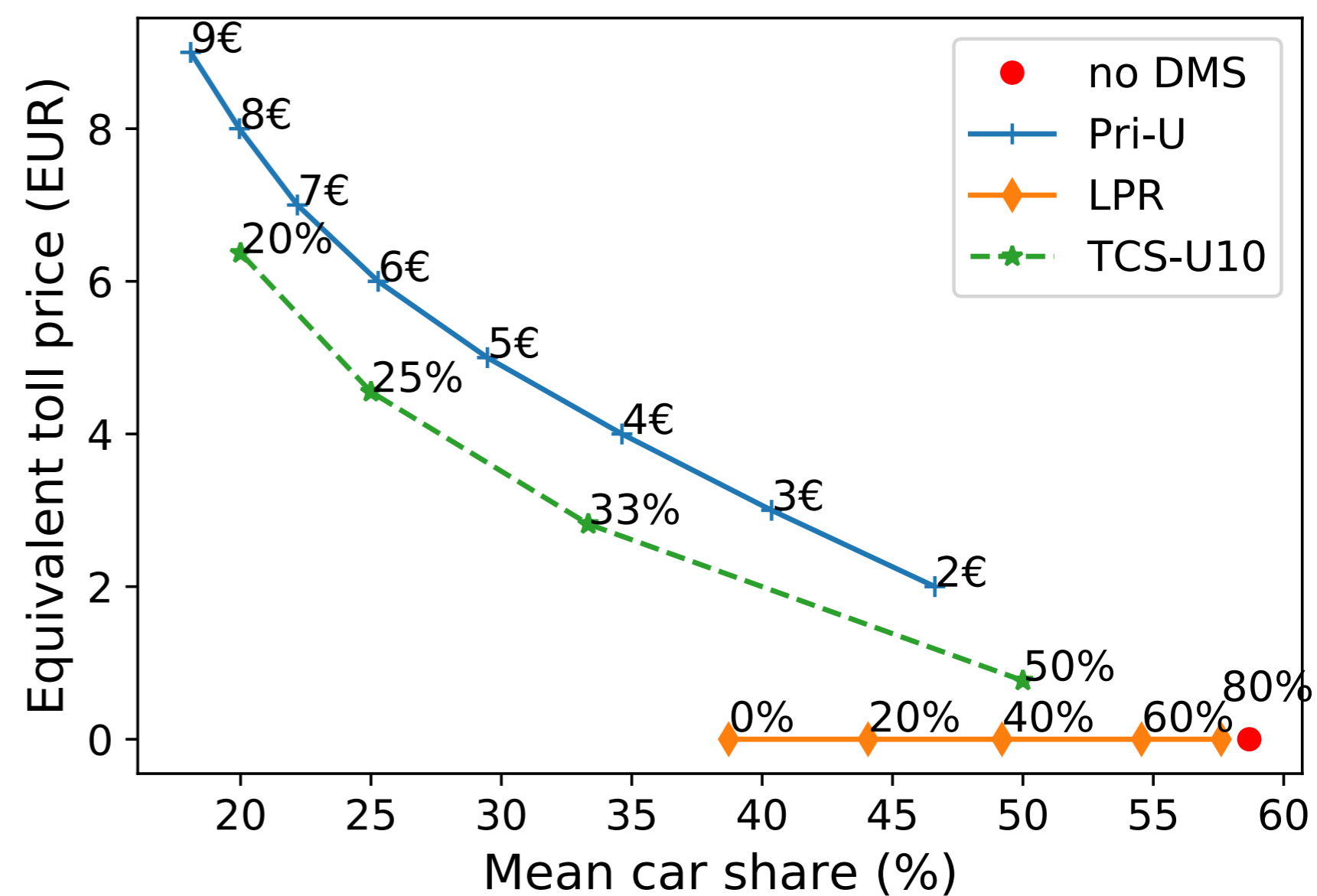
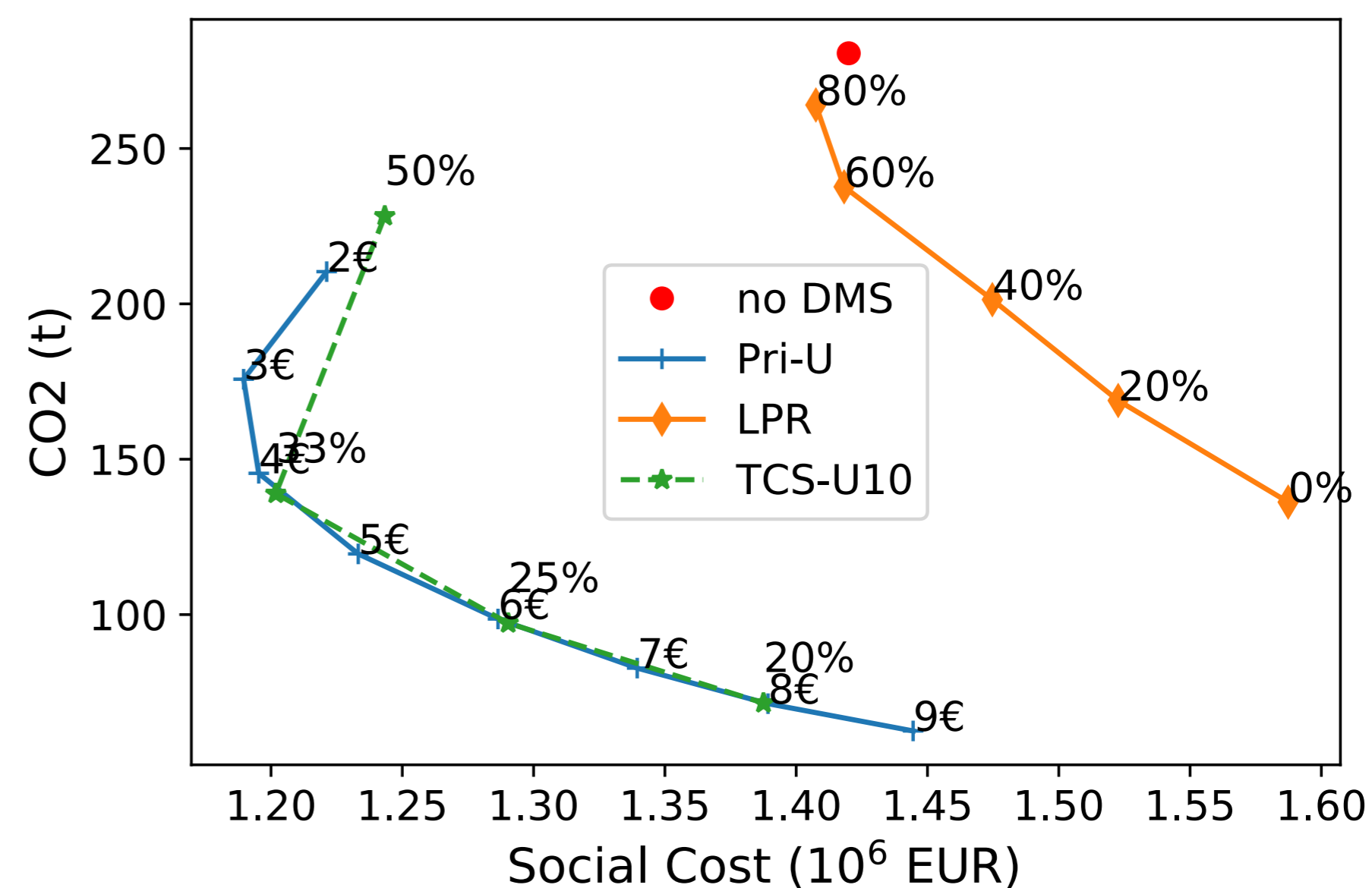
About 380 000 trips.

They can keep their credits for two weeks.

LPR: 20% means 20% of the population is exempted from LPR.

Pricing: 5 EUR means it costs 5 EUR to drive a car.

TCS: 20% means, on average, a driver can drive a car every five days.



## Conclusion

Driving a car under TCS is **more flexible** than LPR and **less expensive** than pricing, thanks to the initial allocation and the possibility to use credits over several days.

Future work: departure time choice and dynamic credit charging.

L. Balzer, L. Leclercq, *Modal dynamic equilibrium under different demand management schemes*, Transportation (2022).  
DOI:10.1007/s11116-022-10338-0



This project has received funding from the European Union's Horizon 2020 research and innovation program under Grant Agreement no. 953783 (DIT4TraM).

HOSTED AND ORGANISED BY:



CO-ORGANISED BY:



IN COOPERATION WITH:



TOGETHER WITH:

