TrafficTwin Introduction

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LIS

ULB

MLG MACHINE LEARNING GROUP

TORRES Project

- Provide authorities and cities with the means to better understand and quantify the impact of their policies on traffic and mobility, affecting citizen's quality of life and safety
  - AI + machine learning to make smarter data-driven decisions
  - Financing body : **Innoviris**
  - Labs involved : **Macq** (B. Cornelis), **ULB-MLG** (G. Bontempi), **VUB-ETRO** (A. Munteanu)

- Core technologies
  - **Forecasting traffic data**
  - **Large-scale data-driven calibration from raw traffic counts data***
  - **Data augmentation: accessible and privacy-aware redistributable traffic datasets**

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(*) Guastella, D.A., Morales-Hernández, A., Cornelis, B. et al. Calibration of vehicular traffic simulation models by local optimization. Transportation (2025). https://doi.org/10.1007/s11116-025-10593-x

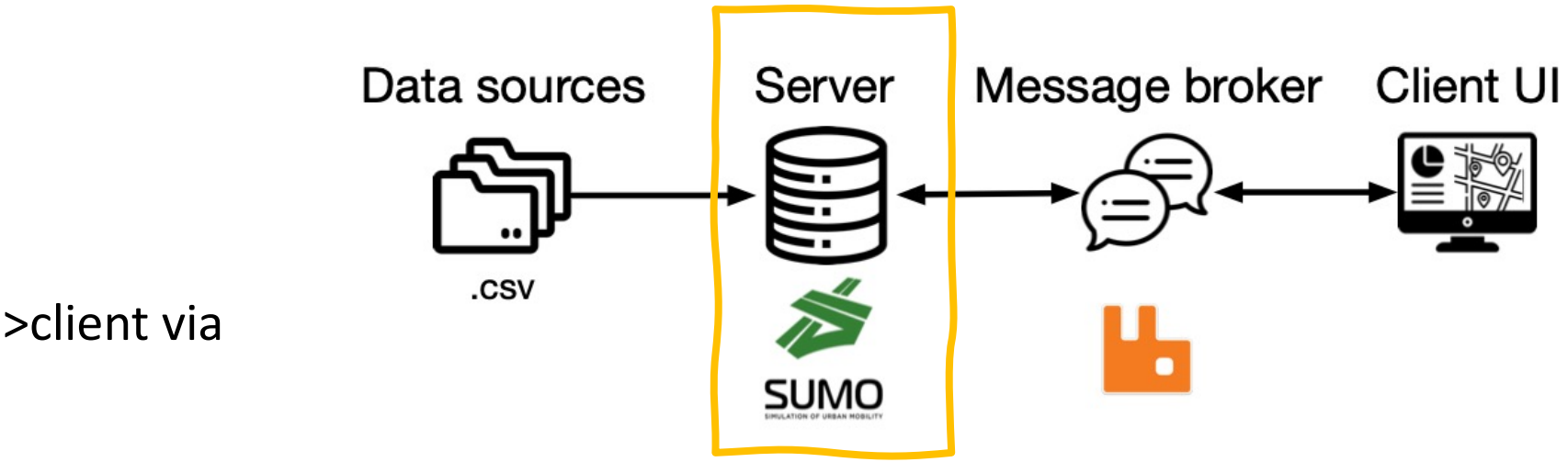
TrafficTwin

- **Objective**: evaluate the impact of **disruptive events** in vehicular traffic
  - **Duration**: 12 months
  - **Type**: Pilot project
  - **Administration Representatives**: Brussels Mobilité, Parking Brussels, Commune d'Ixelles, Paradigm

- **Requirements**
  - Simulation (**based on SUMO**)
  - **Accessible user-interface** to define control strategies
  - Temporal scheduling of **road deviation plans**

TrafficTwin

- **Data sources**
  - Traffic Model(s)
  - Deviation plans
- **Server**
  - **Based on SUMO**
- **Message Broker**
  - Communication server<>client via MQTT
- **Client UI**
  - Graphical definition of deviation plans
  - Configuration of simulated traffic



TrafficTwin

[Planning]

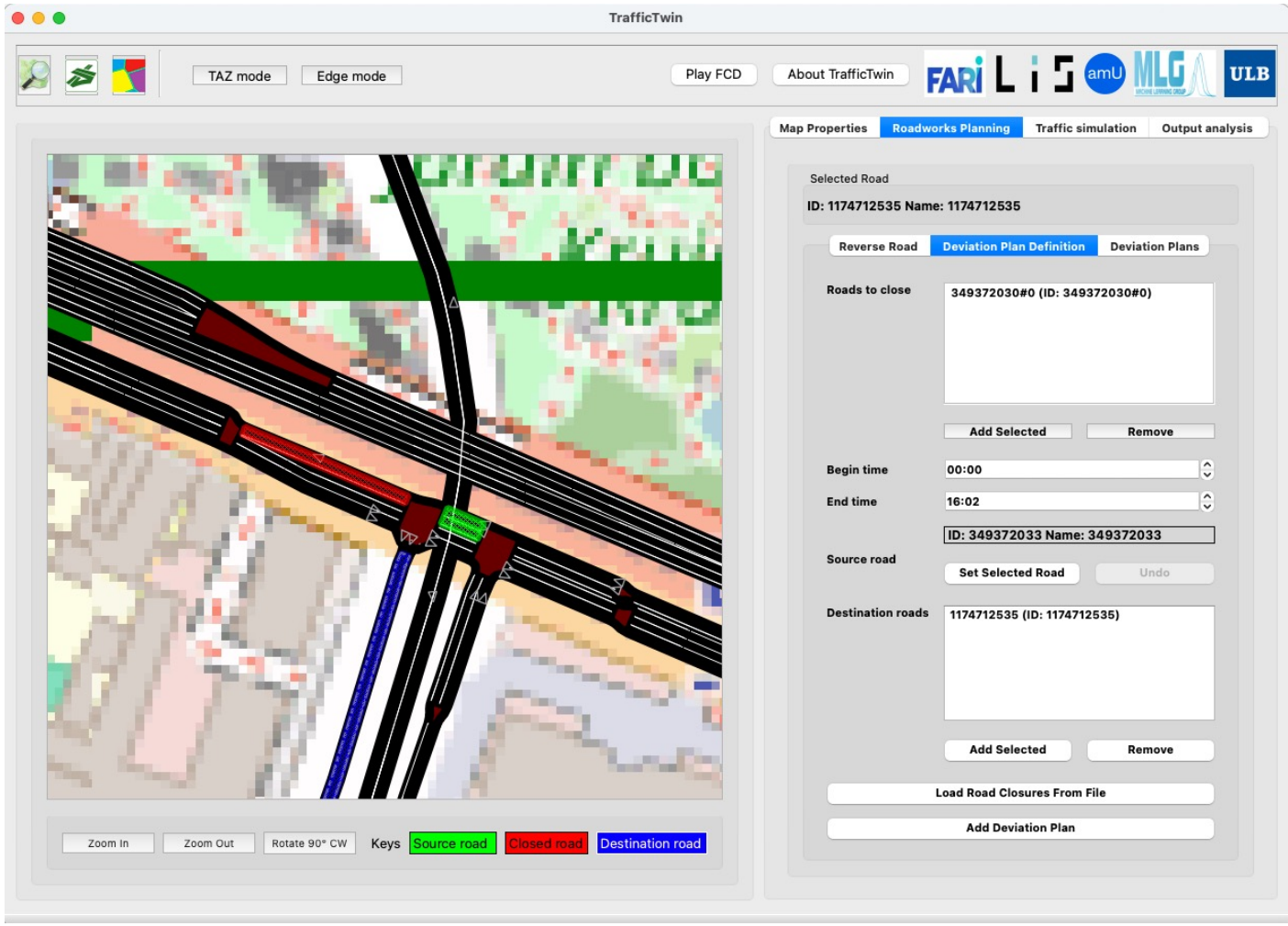
- Configuration of the scenario
  - Selection of the road to be closed

[Simulation]

- Configure the time interval when roads are closed
- Configure the level of traffic in the simulation
- Run traffic simulation using the configured scenario

[Analysis]

- Analyze traffic indicators obtained from simulation, with and without roadworks



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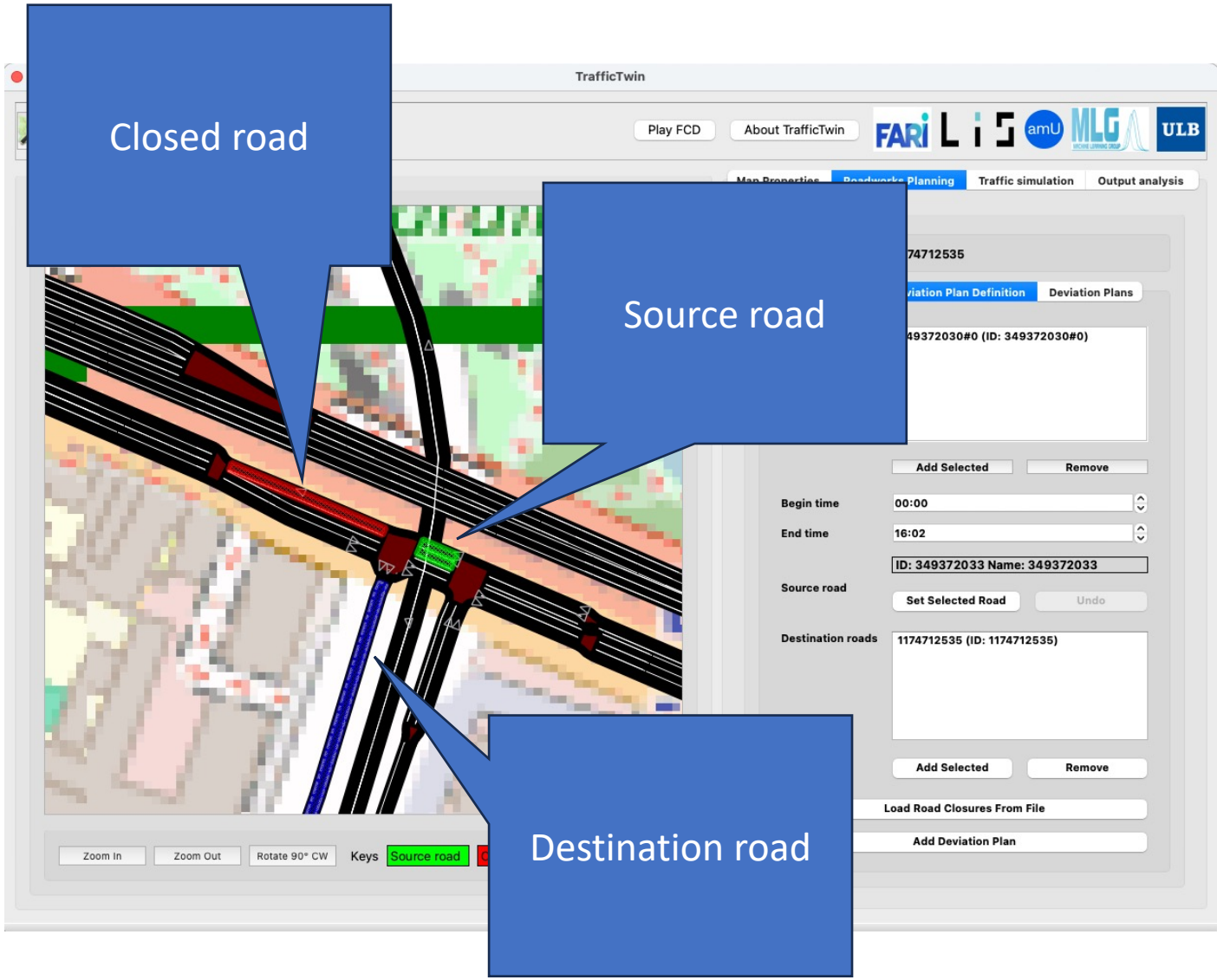

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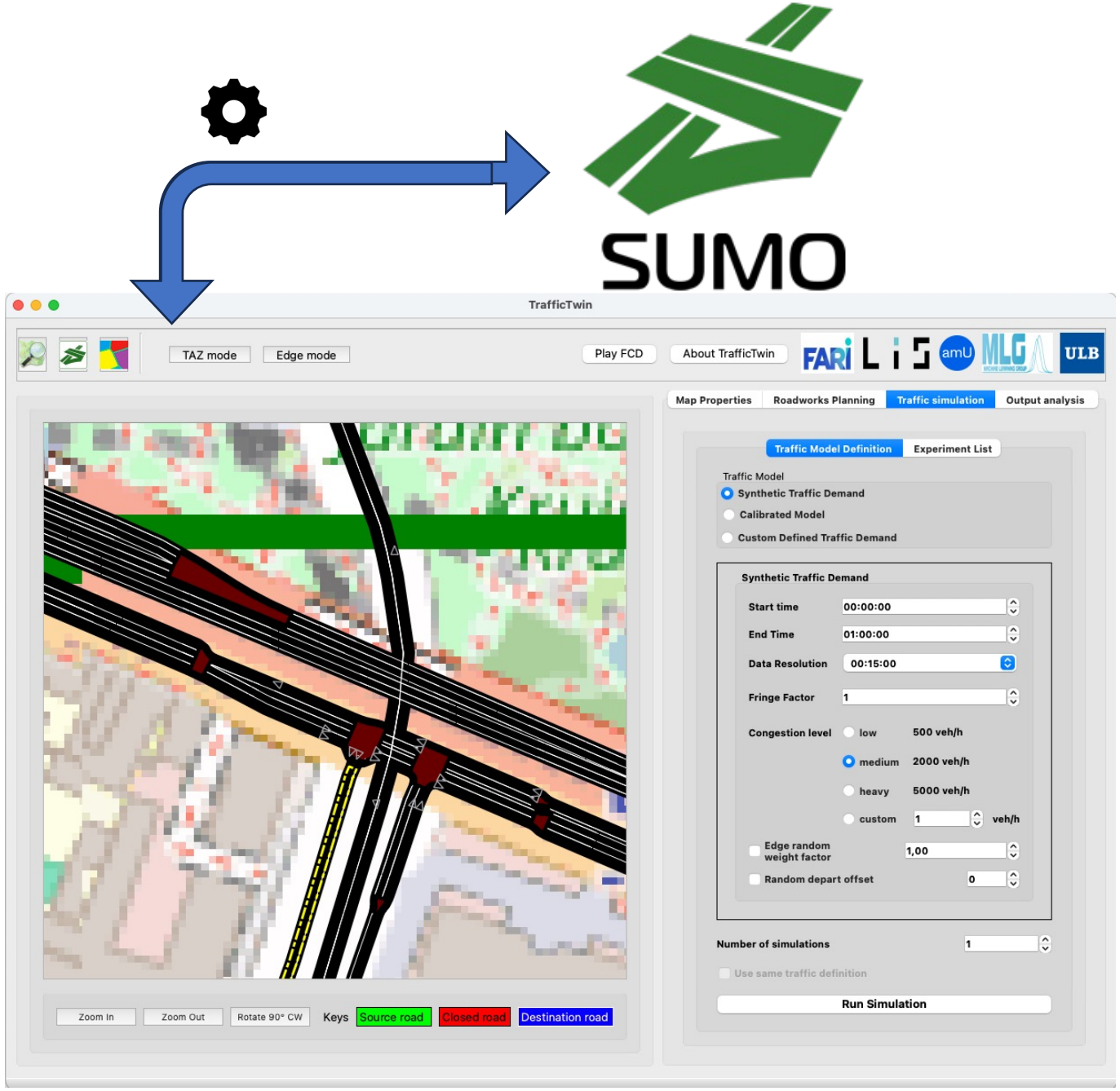

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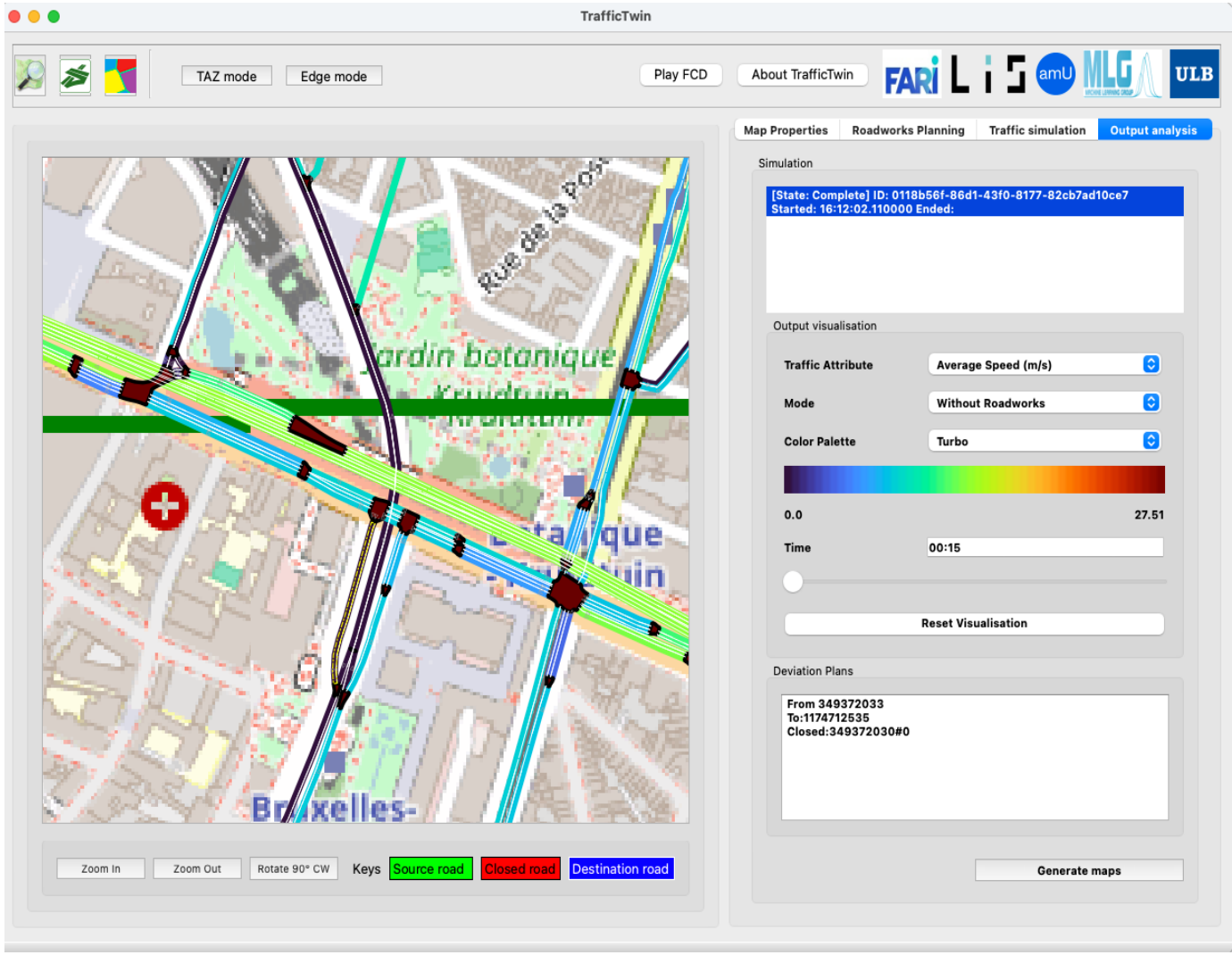

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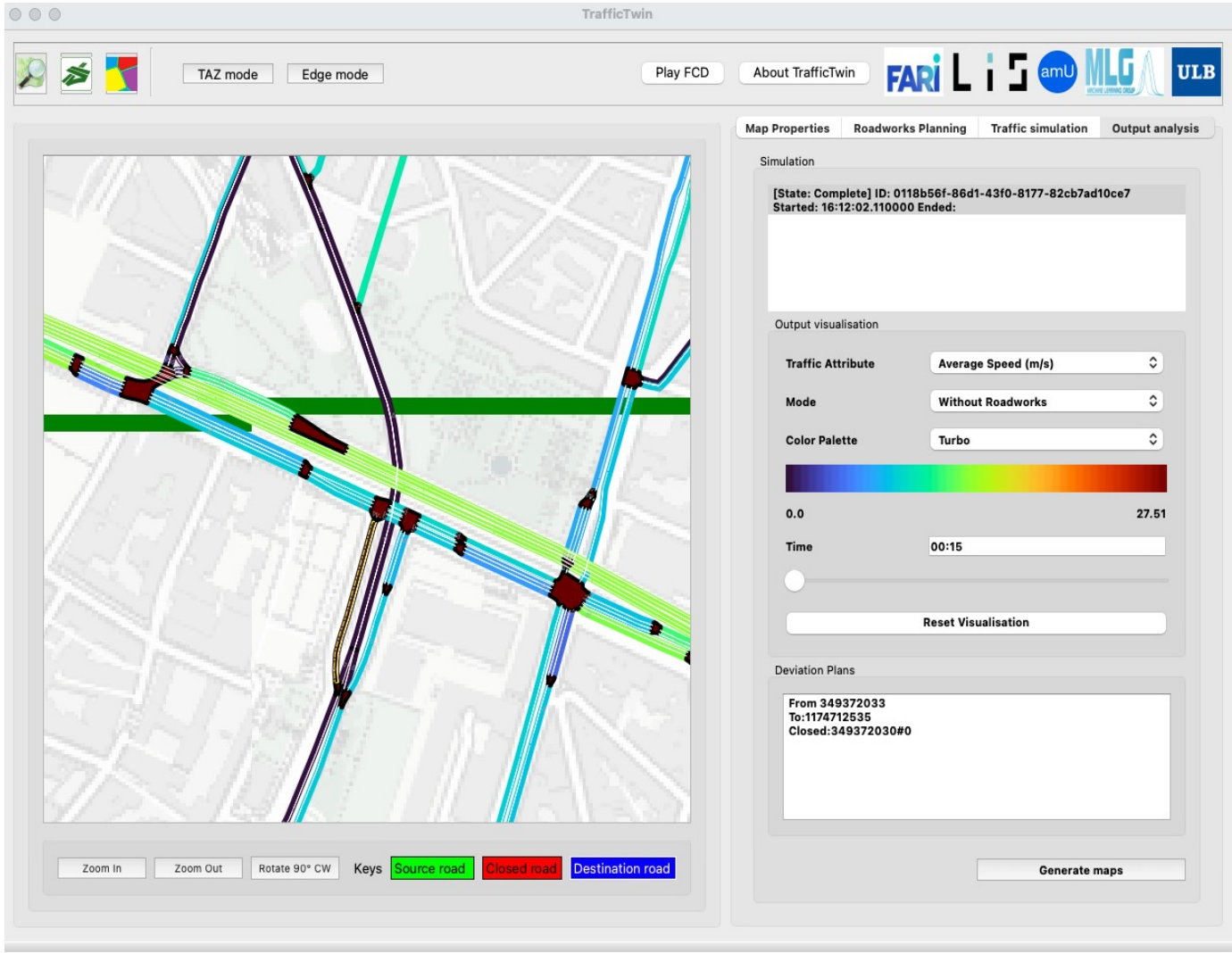

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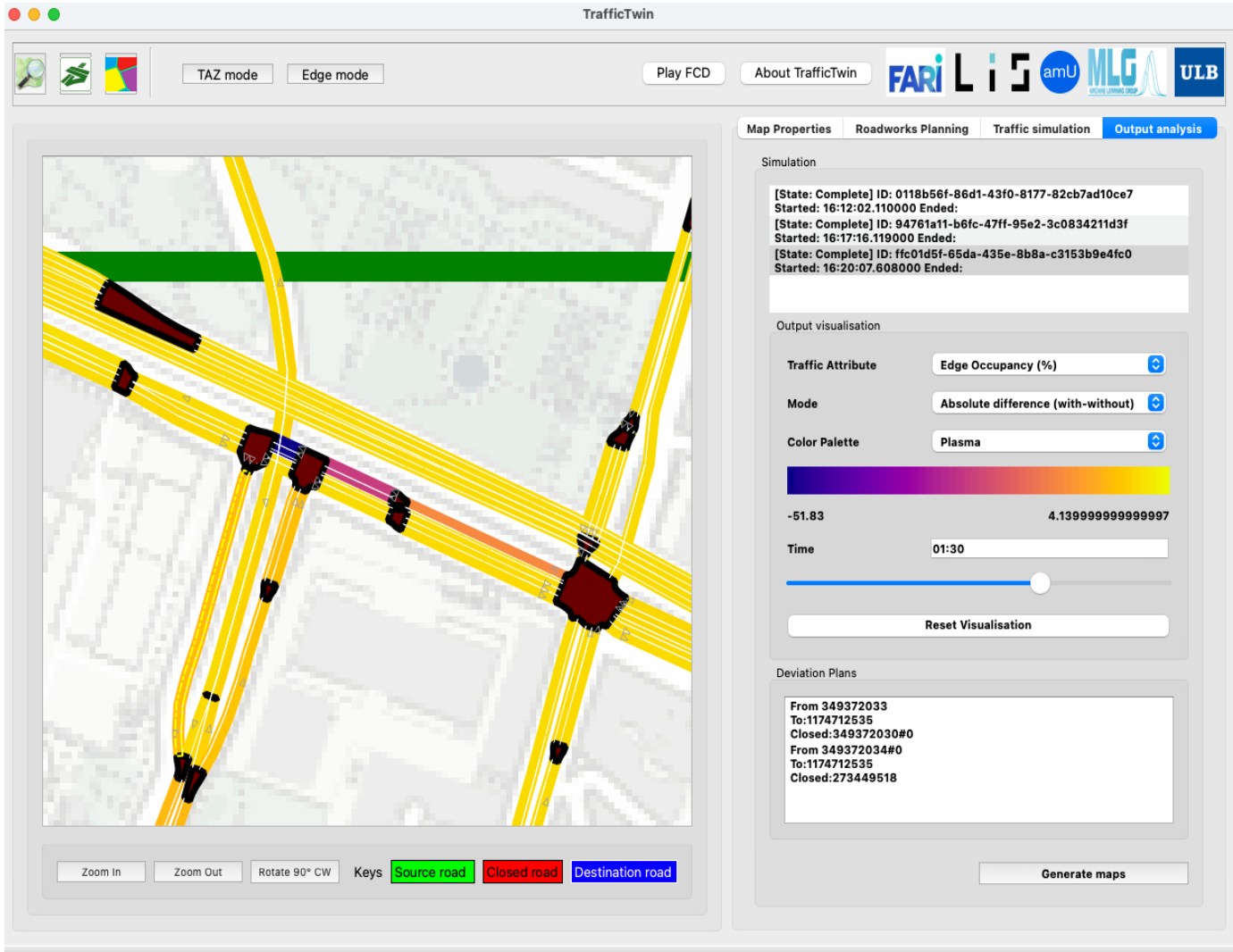

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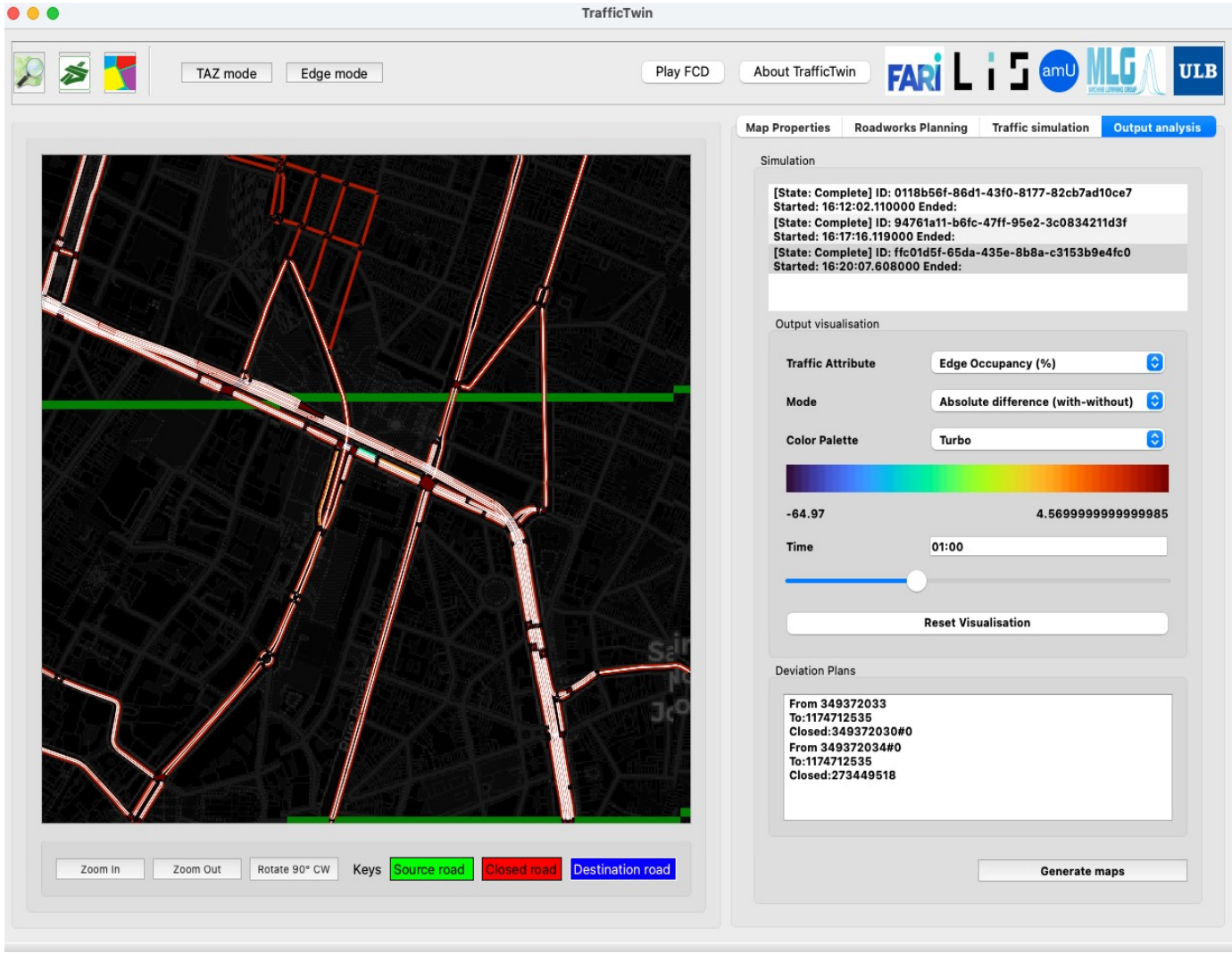

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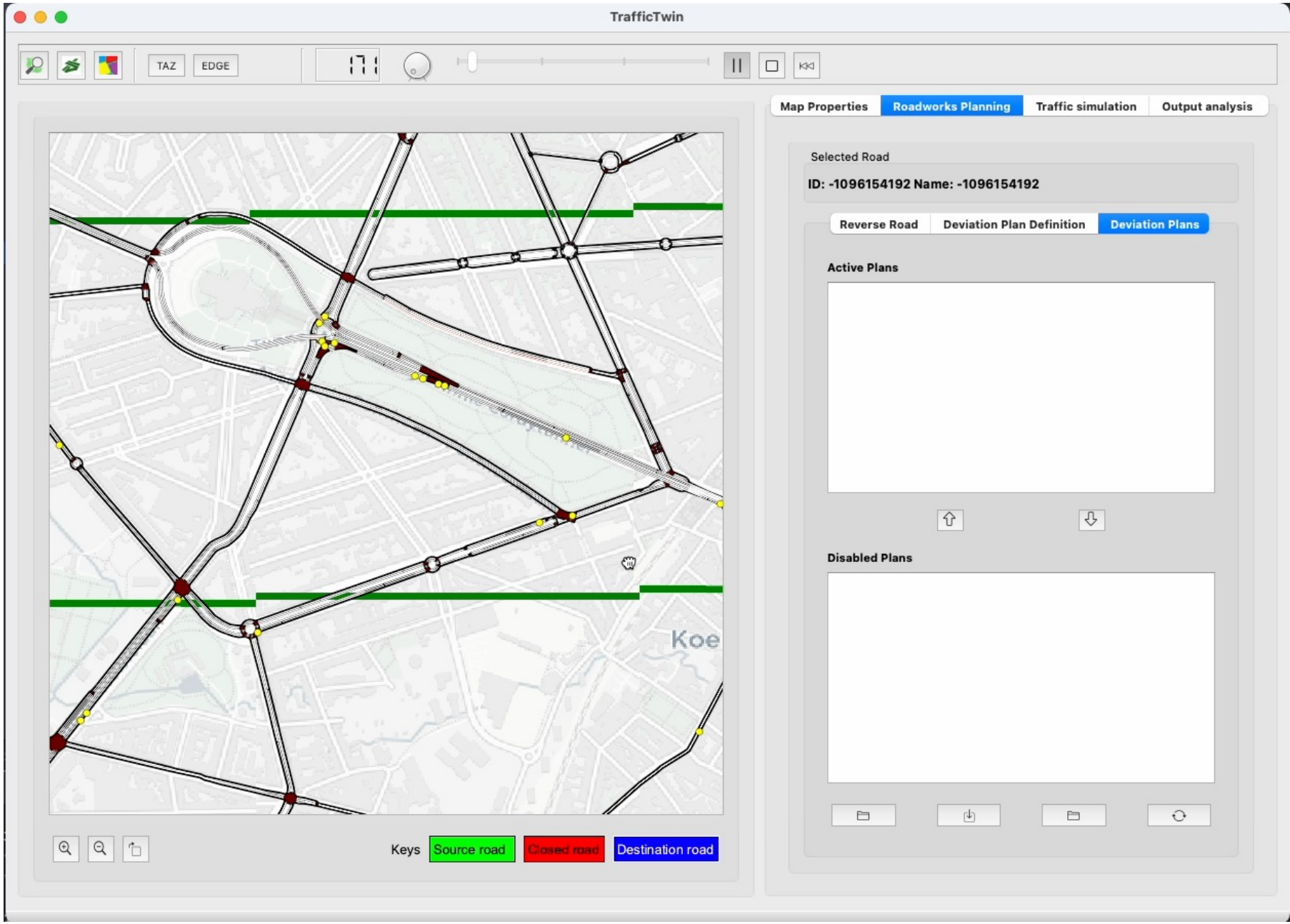
Support for simulation

Replay



Thank you for your attention

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