Sheffield University Management School.

Promoting Sustainable Freight Transport in Urban Contexts:
Policy and Decision-Making Approaches

Logistics Planning in Urban Contexts - A Strategic Decision-Making Approach

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Overview

- **Urban Consolidation Centres: pros & cons**
- Advantages of a Strategic Tool
- Features of the Strategic Tool
- Application: Genoa
- Conclusion

UCCs: Advantages

- Reduced urban traffic/congestion and emissions/noise [Lin et al. (2016)]
- Heavy vehicles: 27% energy consumption and 64% total PM2.5 emissions (U.S. Department of Energy 2012)
- Cooperation among suppliers, carriers and customers: better utilisation of shipping resources [Kohler (2001)]
- Improve efficiency if set up properly [Taniguchi and Thomson (2002)]

UCCs: Drawbacks

- Survival after the initial government subsidy period is difficult [Lin et al. (2016)]
- Institutional factors to compromise UCC survivability: leadership, operational agreement, financial support, interaction with the logistics networks [Panero et al. (2011)]
- Operational factors: spatial coverage, location and fleet management [Panero et al. (2011)]

UCCs: Successful Examples

- Nijmegen (Netherlands): a consolidation centre has eliminated unnecessary truck trips in the city centre [Quak and Tavasszy (2011)]
- La Petite Reine (France): intra-urban freight terminal for delivering goods with the so-called cargocycle (a manual tricycle)

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Advantages of a strategic tool

- Use of planning results to estimate costs by considering some hypotheses:
  - Amount of parcels (orders)
  - Number of vehicles
  - Logistic points (shops) included
  - Location of the logistic base (UCC)

Advantages of a strategic tool

- Different scenarios to test the feasibility of the consolidation centre:
  - UCC vs “direct shipping” [Lin et al. (2016)]
  - Position of the UCC
  - Daily planning over a week/month
  - Emissions and savings

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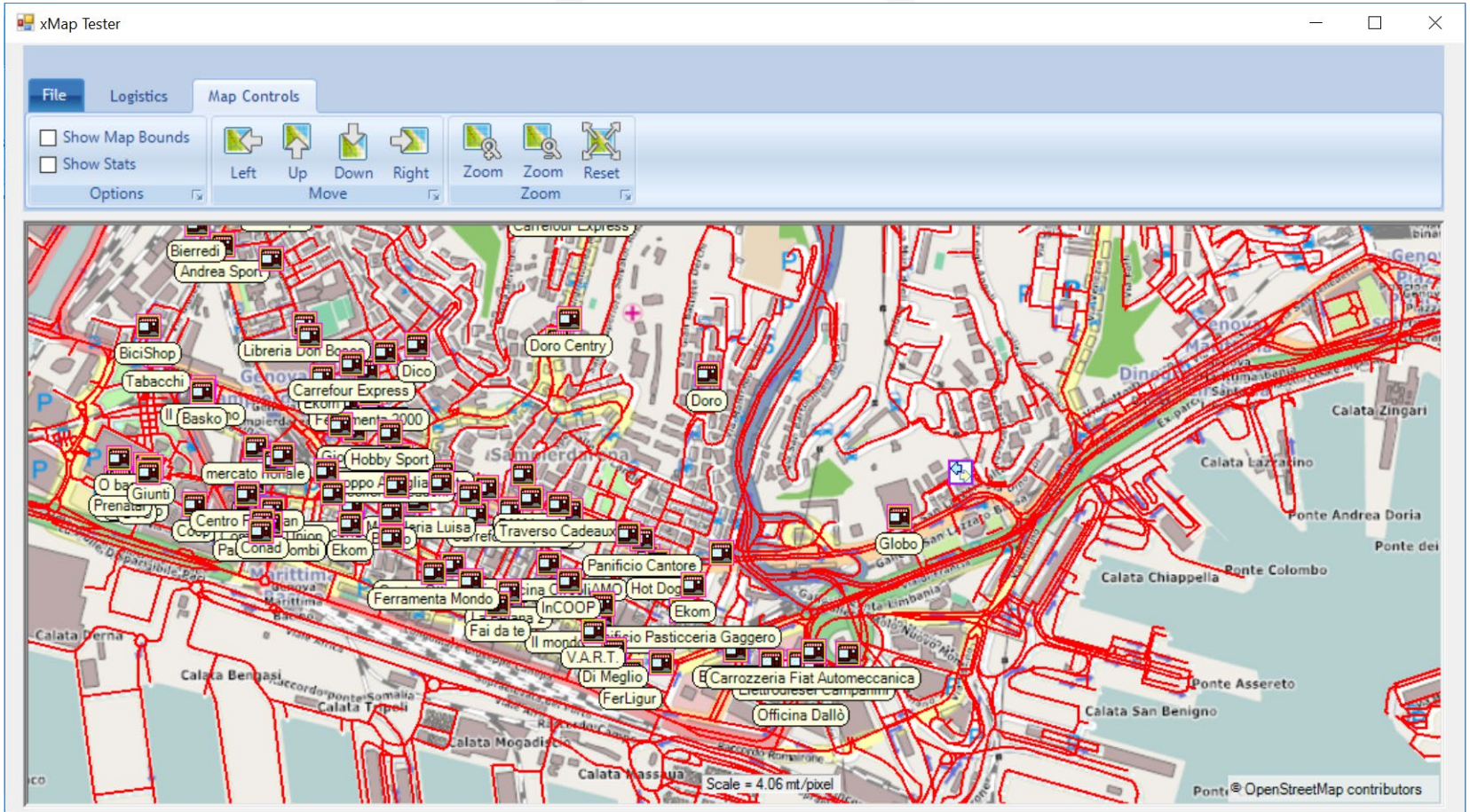
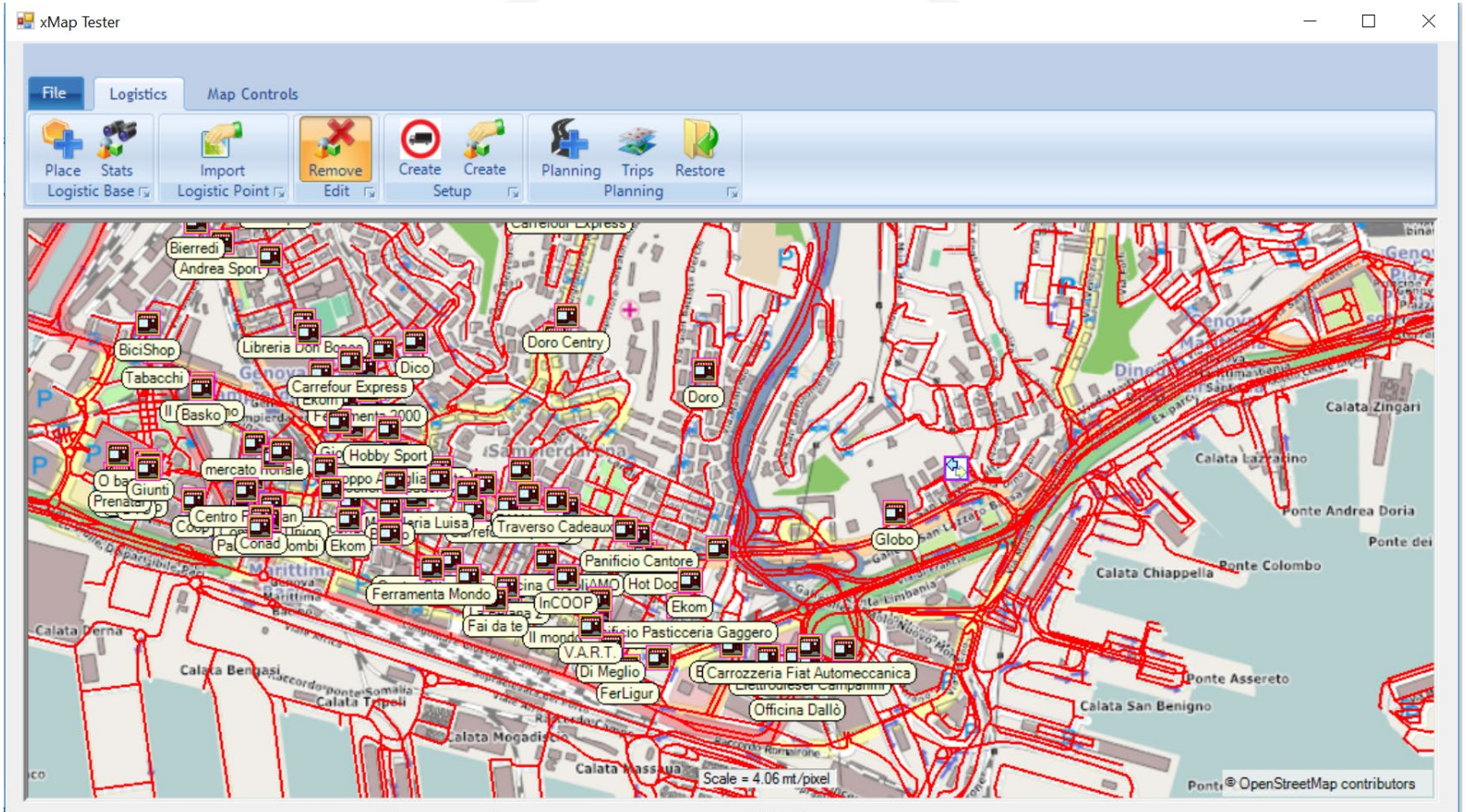
Features of the Strategic Tool

- Map: move, zoom, reset, show stats and bounds



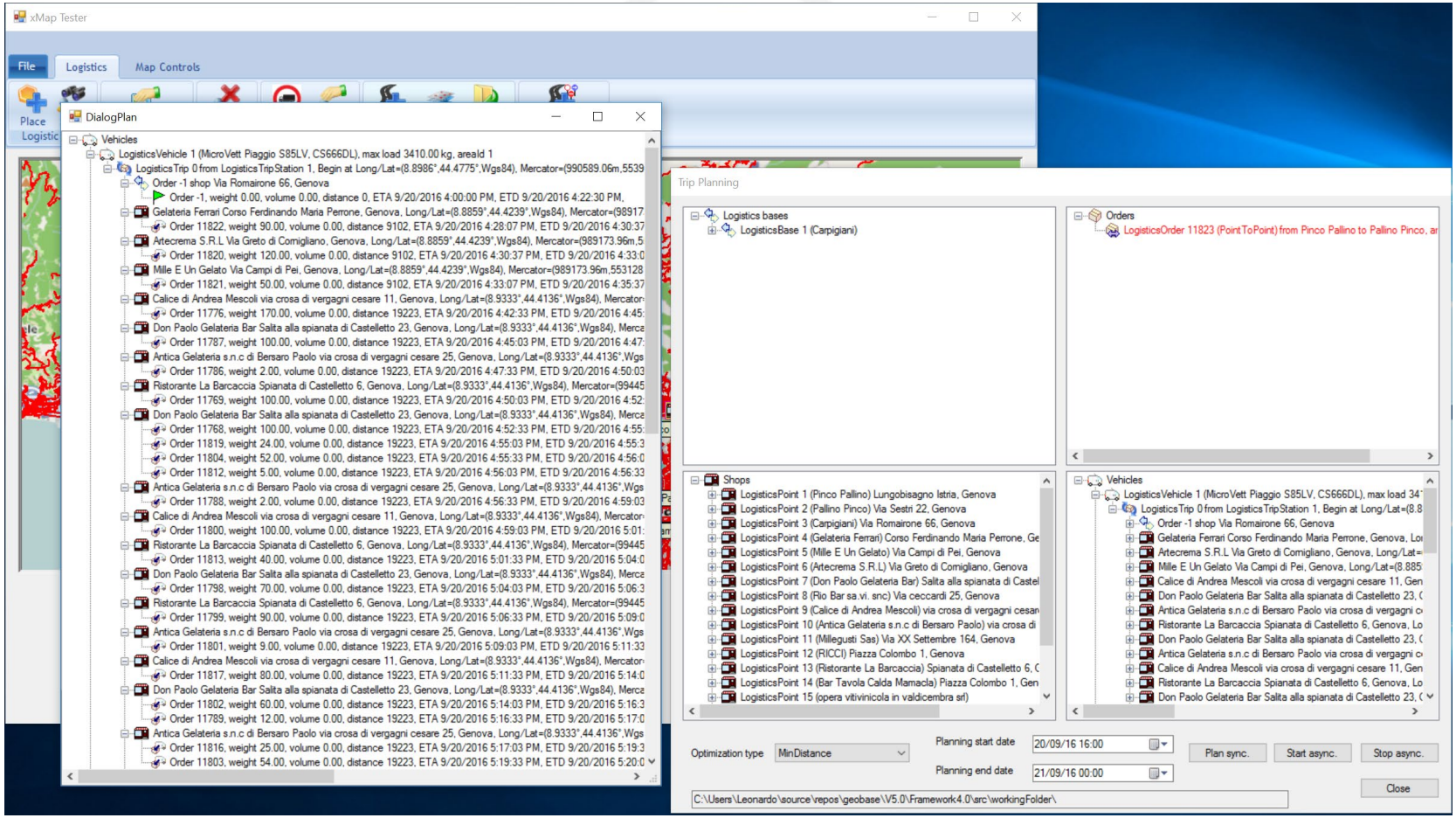
Features of the Strategic Tool

- Logistics: place base, import shops, remove, create fleet/orders, planning and restore



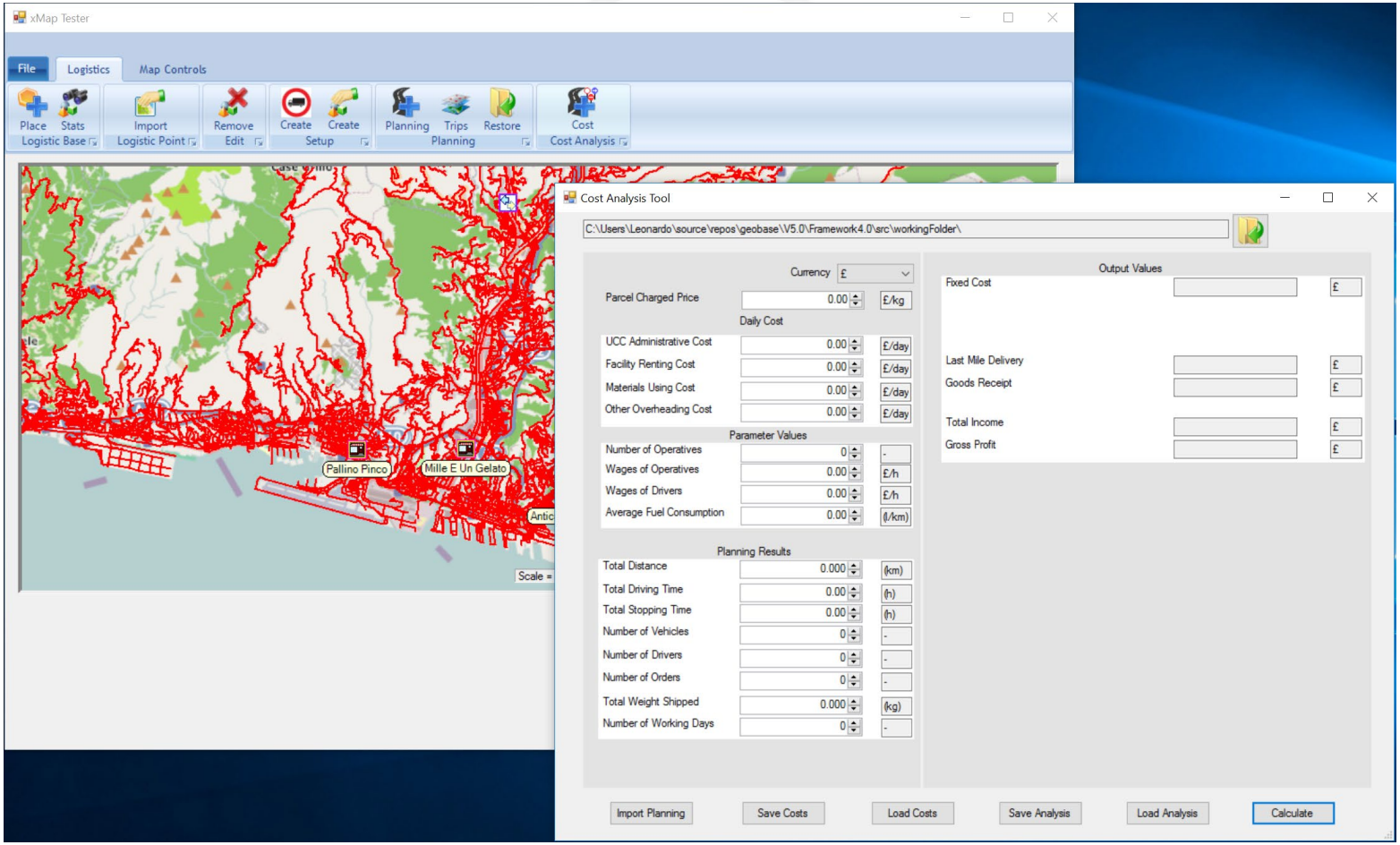
Features of the Strategic Tool

- Planning and the corresponding results



Features of the Strategic Tool

- Cost Analysis [Janjevic et al. (2017)]



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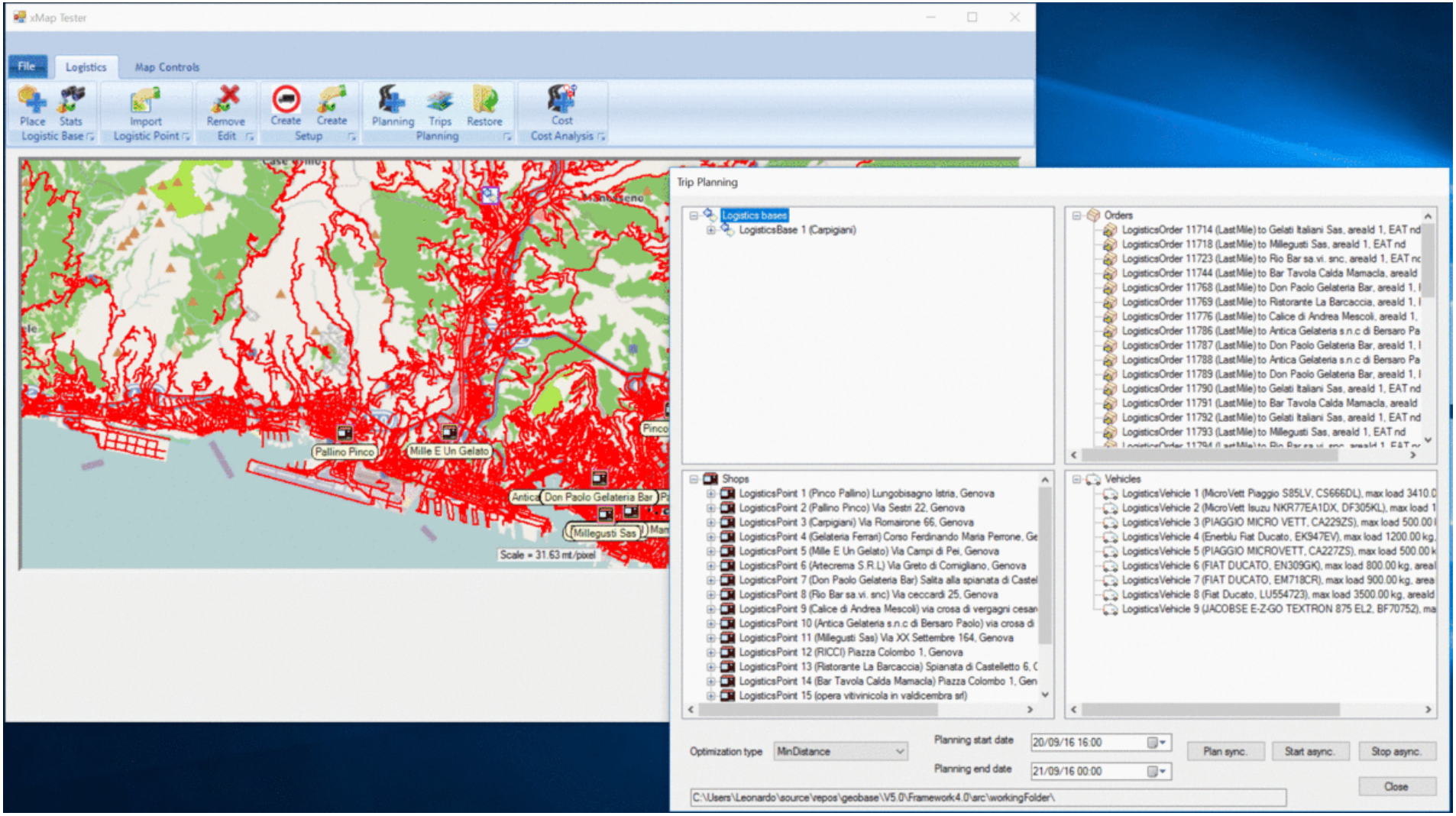
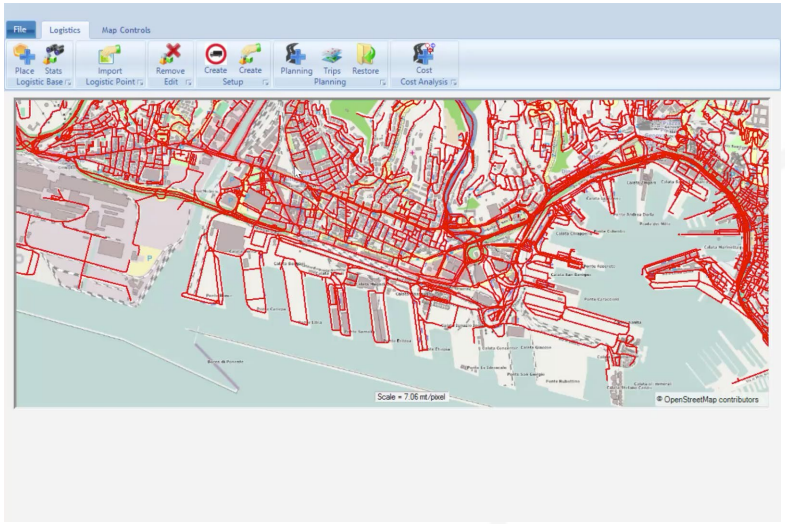
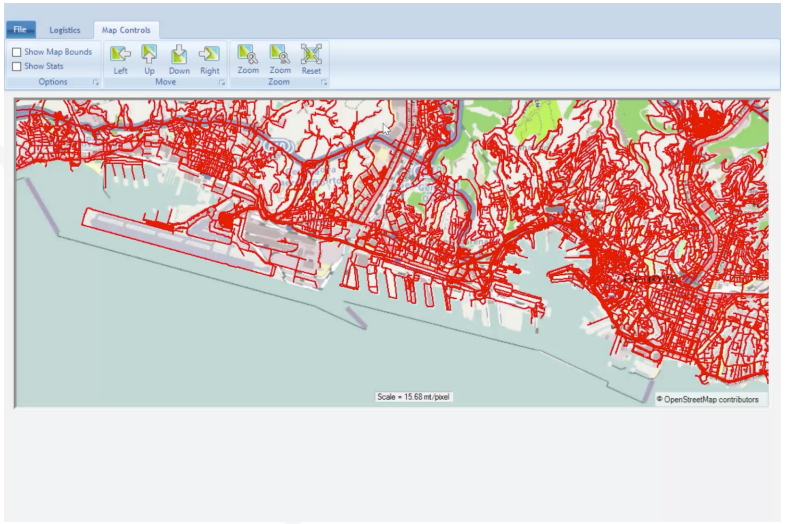
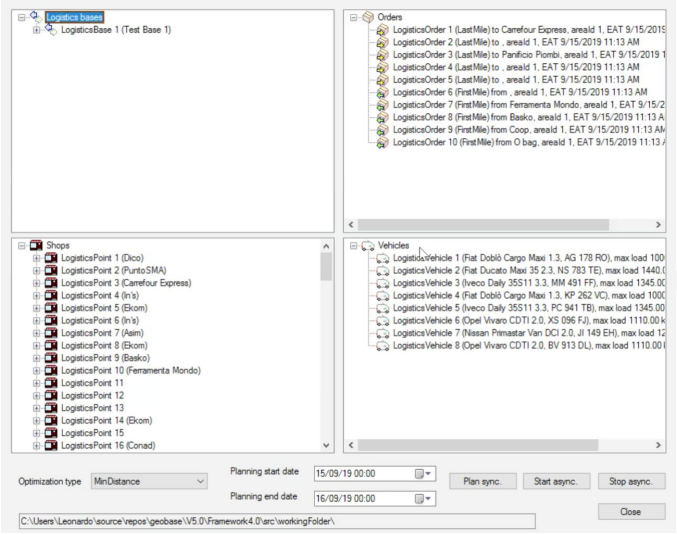
Application: city of Genoa (Italy)

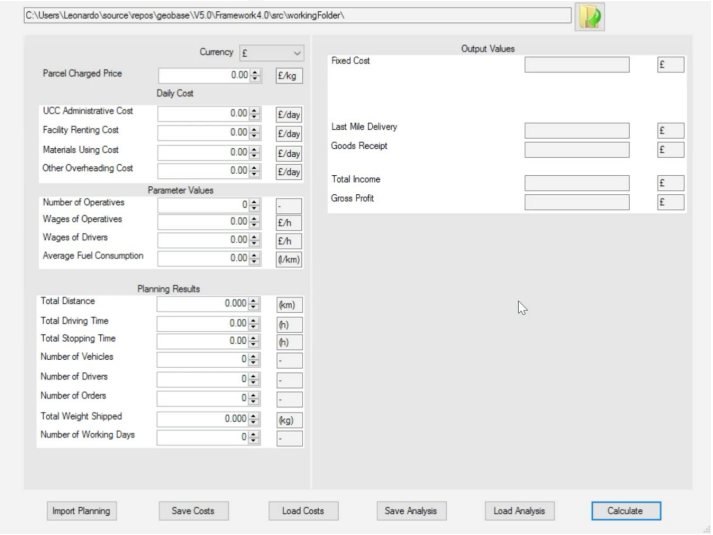


Application: videos









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Conclusions

- UCCs: intro and context, pros and cons
- Advantages of a strategic software
- Features of the developed Strategic Tool
- Case study: city of Genoa
- Future directions:
  - Feasibility analysis - report creation
  - Software up to standards for commercialisation