

Accessibility as a key concept to understand urban transport policies

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Context and objective

An urban trip as a combination of two components :

- A time component
- A land-use component

Accessibility : a tool to guide and improve public decision

- Location of opportunities
- Characteristics of the transport network

The need for a more accurate measurement of accessibility

Objective : to improve measurement of accessibility
associating a GIS-T and a transport model

Accessibility as a wide concept

Accessibility can be defined as... (Morris, 1979)

- the ease with which activities can be reached (from a given location and using a particular transport system)
- a combination of physical movement, transportation system, and land use
- a measure of spatial separation of human activities

Many accessibility indicators evolved in the literature

The choice of a gravity-based measure

Following Hansen (1959):

$$A_i = \sum_j D_j \exp(-\beta c_{ij})$$

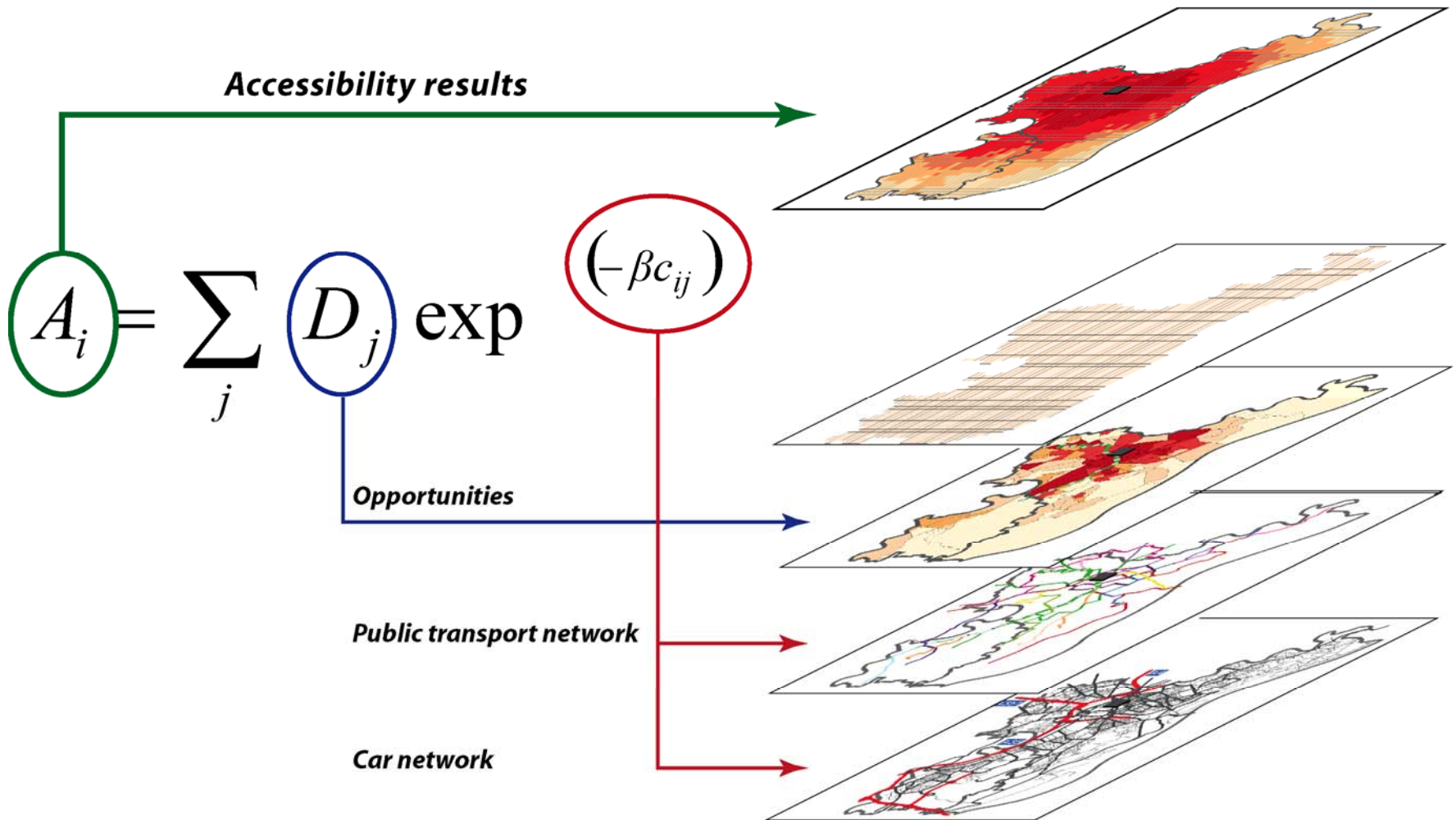
Opportunities

Cost coefficient

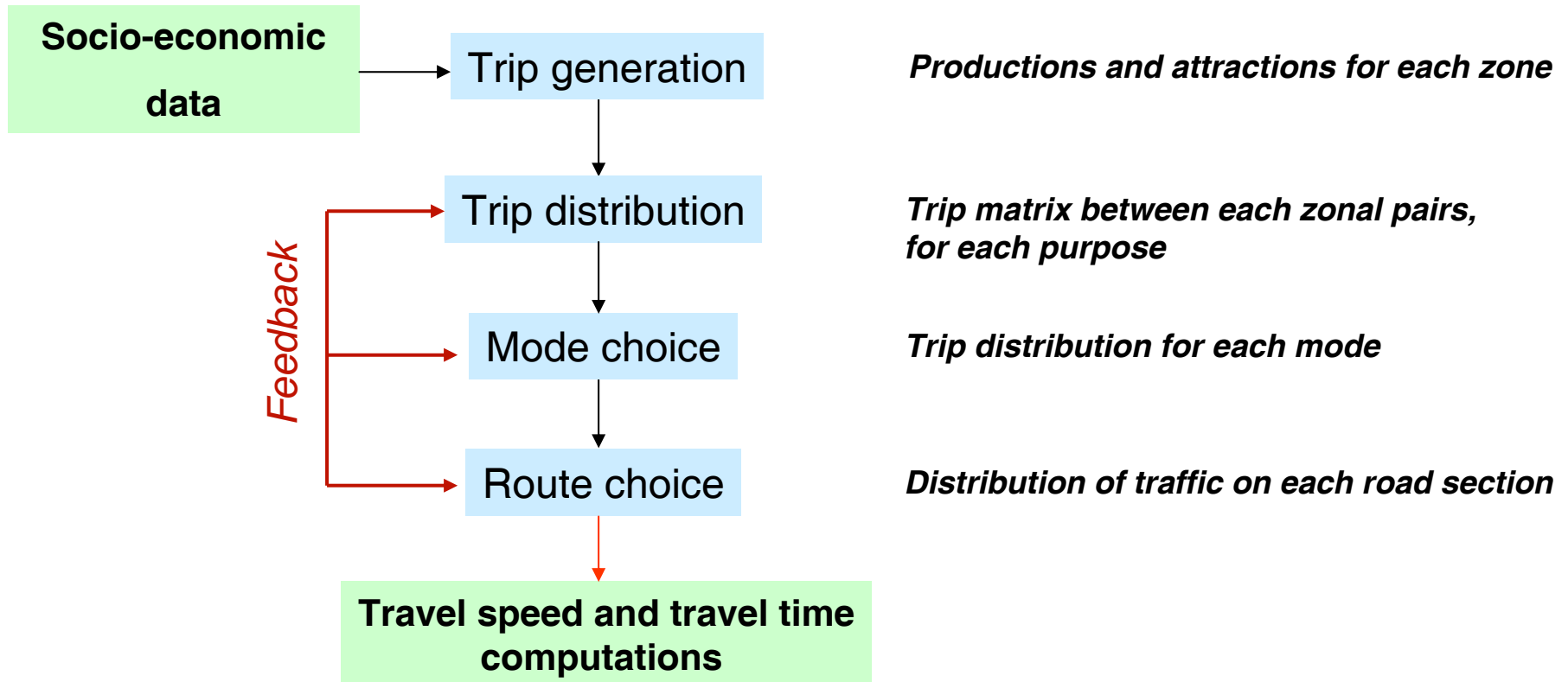
Travel Cost

- Transport/ land use interaction
- Accessibility to jobs

Improving accessibility measure using a GIS-T



Introduction of road congestion charge using a 4-step model



Strasbourg case study : three scenarii on modal competition

Ex-post assessment of the transport policy after the tram-line implementation

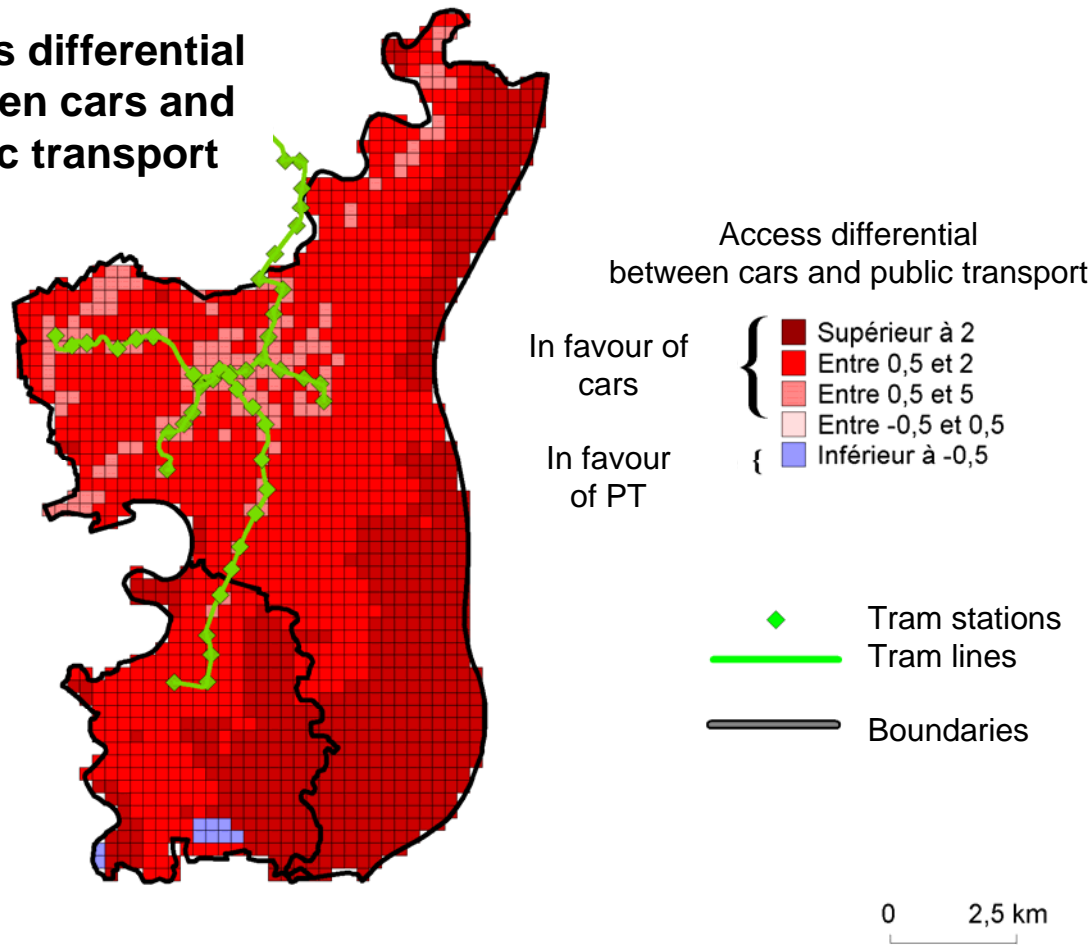
Scenario 1 : Can public transport compete with private car ?

Scenario 2 : Can public transport compete with private car to access to town center?

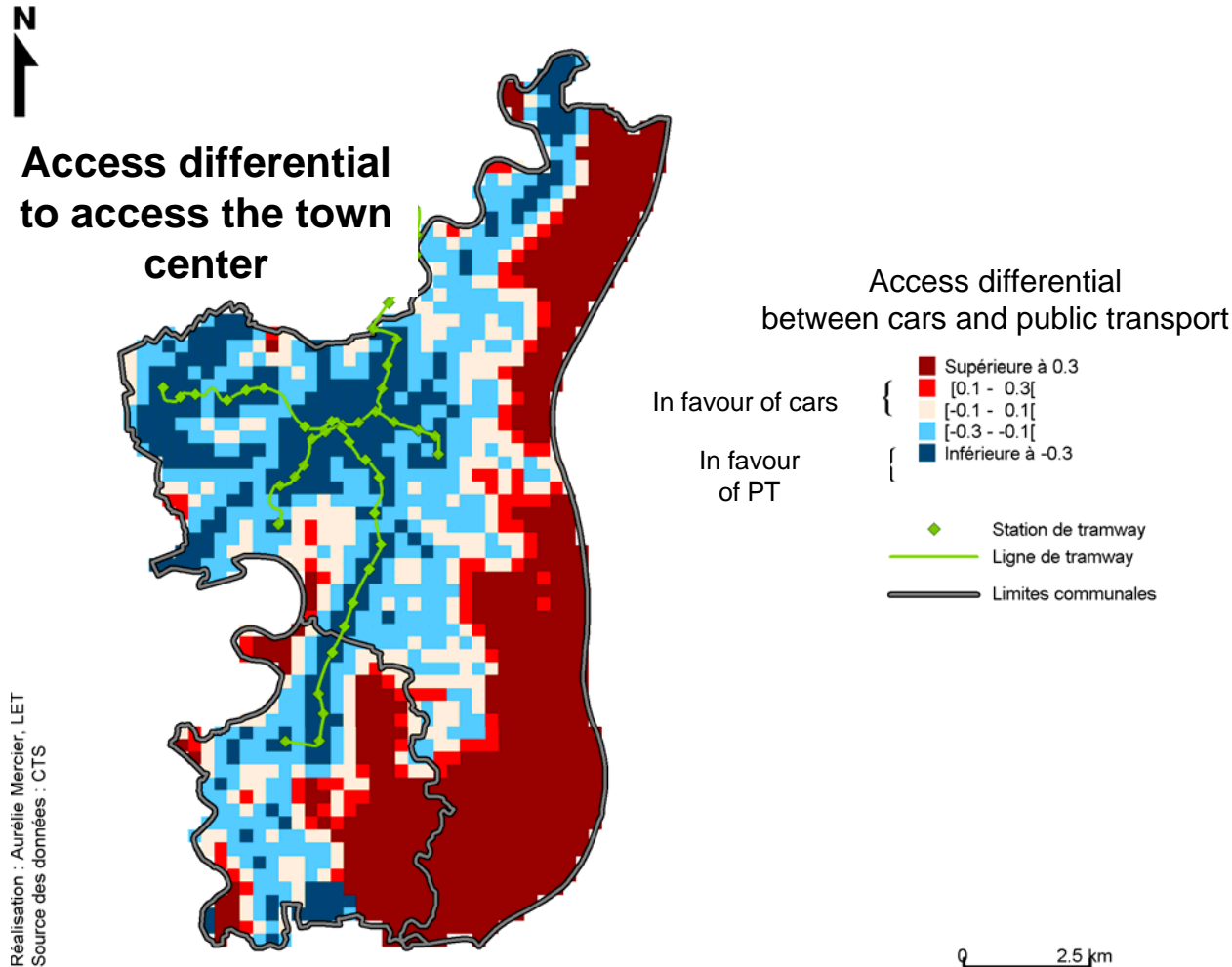
Scenario 3 : Forecast scenario : What scenario to improve public transports competitiveness ?

Scenario 1 : Modal competition between cars and public transports

Access differential between cars and public transport



Scenario 2 : Modal competition to access the town center

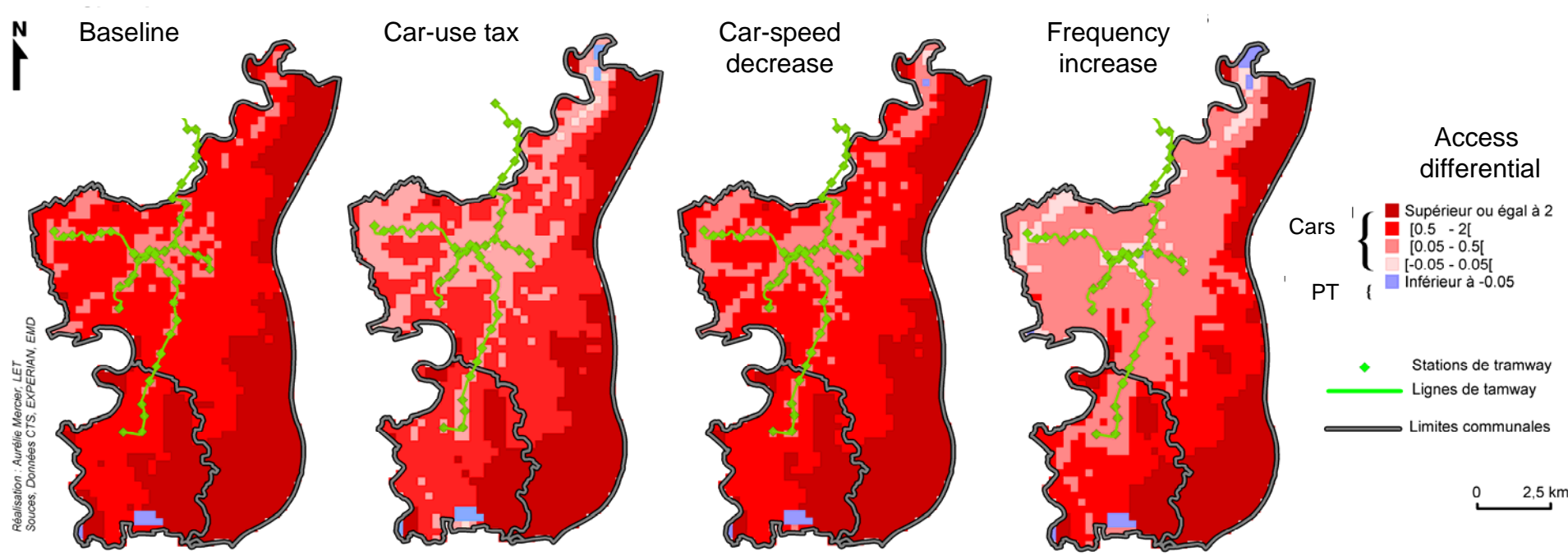


Scenario 3 : How to improve modal competition between cars and public transports?

- **Alternative 1 : increase of generalised costs for road users**
 - Monetary tax (fuel tax, for example)
 - Car speed limitation
- **Alternative 2 : decrease of generalised costs for public transport users**
 - Improvement of bus and tram frequencies to reduce waiting time at bus stops.

Scenario 3 : How to improve modal competition between cars and public transports?

Three alternatives to improve modal competition



Conclusion

Accessibility : a tool to guide public decision making

Interest of GIS-T to measure gravity-based access

When associated to a 4-step model, integration of congestion charge to refer the real transport conditions

Example of Strasbourg

-> Three alternatives to improve modal competition and best results with an increase of public transport frequencies