Visualising Trip Durations by Rail   
throughout Europe and France with Tempograpic Maps

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Abstract

**Trip durations are not proportional to the distances one can read on a map. As a result, the visualisation of temporal relationships between objects on a map could be invaluable, for e.g. a tourist wanting to visit another city without travelling too long. We hereby propose some designs suggestions for a soon to be created online project we call “The Tempographic Europe”. We conceive two different tempographic maps, of France and Europe respectively, in which distances between main cities can be distorted to make visible the train trip durations between them. The design shall provide the user with information about the cities he is interested in as well. This kind of work has, to our best knowledge, never be done on a dynamic set, nor on a full European map.**

**Keywords**: Tempographic maps, time-space maps, DataViz, rail network.

**Index Terms**: K.6.1 [Management of Computing and Information Systems]: Project and People Management—Life Cycle; K.7.m [The Computing Profession]: Miscellaneous—Ethics

# Introduction

Since the first so-called “bullet train” in 1964 in Japan, high-speed trains spread throughout the world and deeply changed the conception we have of space. Destinations that were virtually inaccessible previously stands now reachable in a couple of hours. The world, and within it Europe, is said to be “shrinking” as trip durations shorten. But it is common knowledge that trip times are not always, if not never, proportional to the distance travelled. This is due to an uneven rail network in term of speed and frequency, and to various geographical constraints (e.g. a lake to circumvent). As a result, one can observe that it is hard with common static maps to really evaluate how fast a city can be accessed from another one. A map where the time component of train trips is visualised could thus be invaluable. A use case could be: a Canadian globe-trotter wants to establish for one year in a major European capital city, and search for a place from which many other important cities could be accessible easily.

# RELATED WORKS

The concept of visualising time on a two-dimensional map is quite old, but most work that can be found deals with the representation of event that occurs through time (e.g. BACH14), instead of the representation of time relationships between objects with a geometric position.

“Tempographic map” is a term coined by [SOURCE SLIDESHARE]. A tempographic map consist of the distortion of geographic distances on a map to fit a notion of time. Spiekermann and Wegener have in the 90’ published a few work paper on this idea, for the German Institute for Country Planning [SOURCE RAPPORT]. They pursued the same aim as ours: to visualise the shrinking of space induced by high-speed rail lines. They followed two sub-goals. First, proposing different visualisations of the “time context” of a city. This translate into different areas and circles around one reference city. Marks and colors can then translate a one-to-many temporal relationship. The second is more broadly to give to the reader a snapshot of temporal relationships between any two points of a map. A

High speed train -> deformer statiquement l’espace

Rapprocher les villes (a été fait France

Citer l’article, quelques travaux précédents…

Idée d’interpolation…

## Subsection One



1. A tempographic map in XYZ.

## Subsection Two

# DESIGN SUGGESTION

## Subsection One

First of all, we can choose our map to display. It could be the map of France or Europe. This map will show us the travel time between some city. If the time between two cities is short, the distance between them will be short too. At the opposite, if the time travel is long, their will be far away. This map will be displayed on the left and center of our screen.

This model will deform our map the we know cause it will not displayed by the distance like the classic maps, but with the time travel. We choose a city where we want to start our travel, and the map will change automatically by the time travel.

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We will add circle around the city we choose, which will represent a certain time (1 hour for example) so it will be easily to see how many times it take to travel in Europe.

## Subsection Two

The second part is a description of our travel. It will be on the border right of our screen. We can select the city where we want to begin our travel when we click on the map, and the destination.

This description is separated in 3 parts, the description of our reference city, description of our destination and the details of this travel.

In the descriptions cities, we will have some information on our cities like the weather, activities, pictures…

And next we got the details of our travel. We can have some important information’s like the exact time to reach this destination, how mon kilometres…

# Conclusion

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