

BIG DATA

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Università di Pisa e ISTI-CNR
<http://kdd.isti.cnr.it>

Forum PA – Roma 27 maggio 2014



SIAMO TUTTI POLLICINI DIGITALI

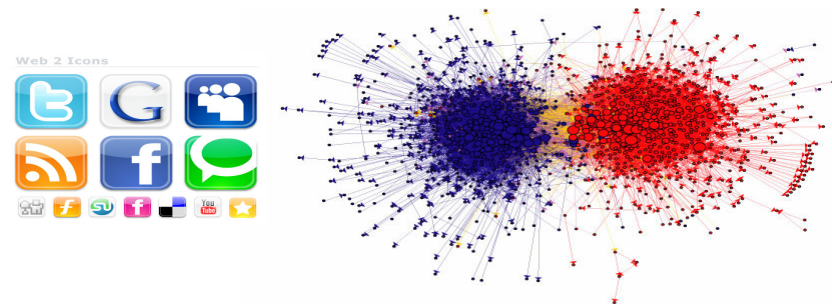
La Vita Nova, e-magazine de Il Sole 24 Ore
Fosca Giannotti, Dino Pedreschi

Big data “proxies” of social life

Shopping patterns & lifestyle



Relationships & social ties



Desires, opinions, sentiments



Movements





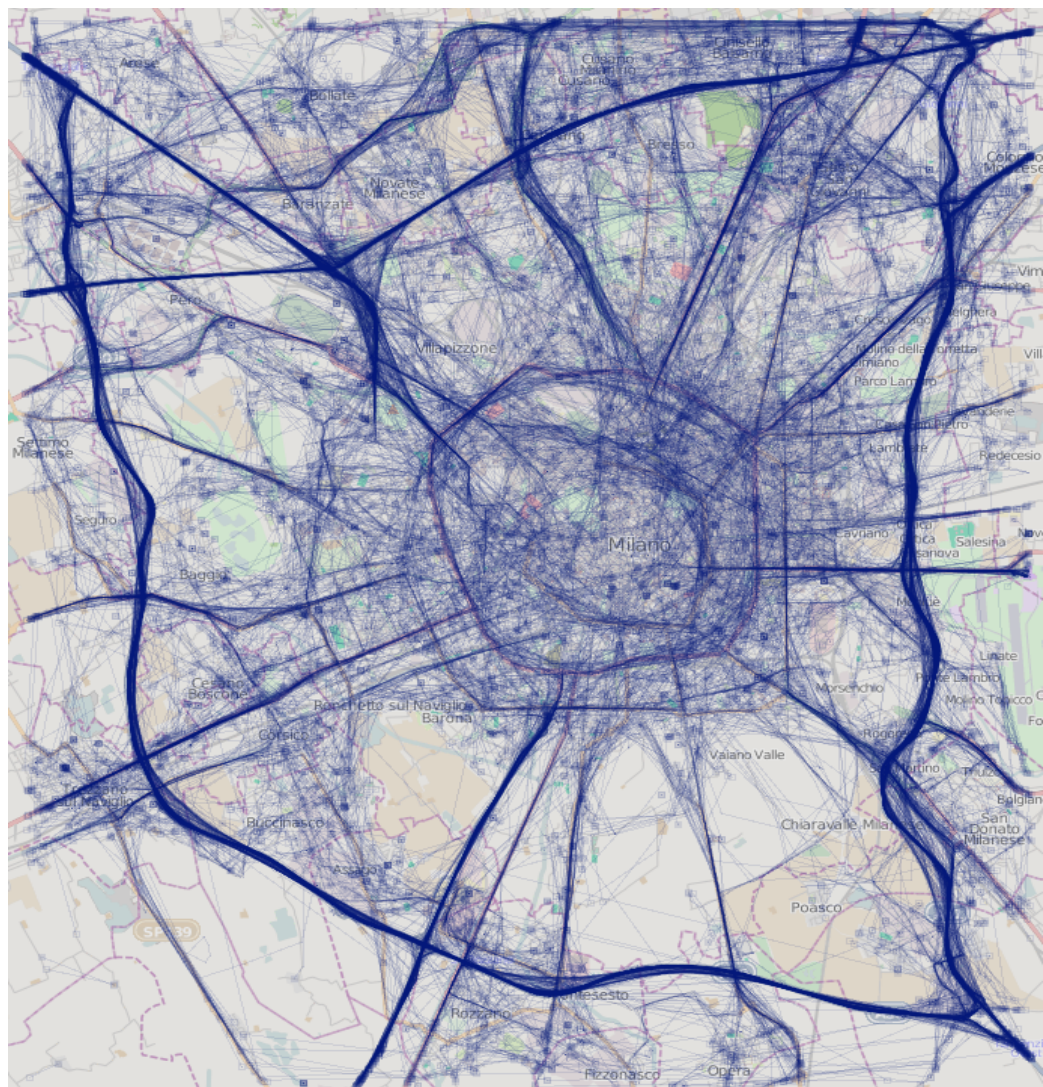
Paris

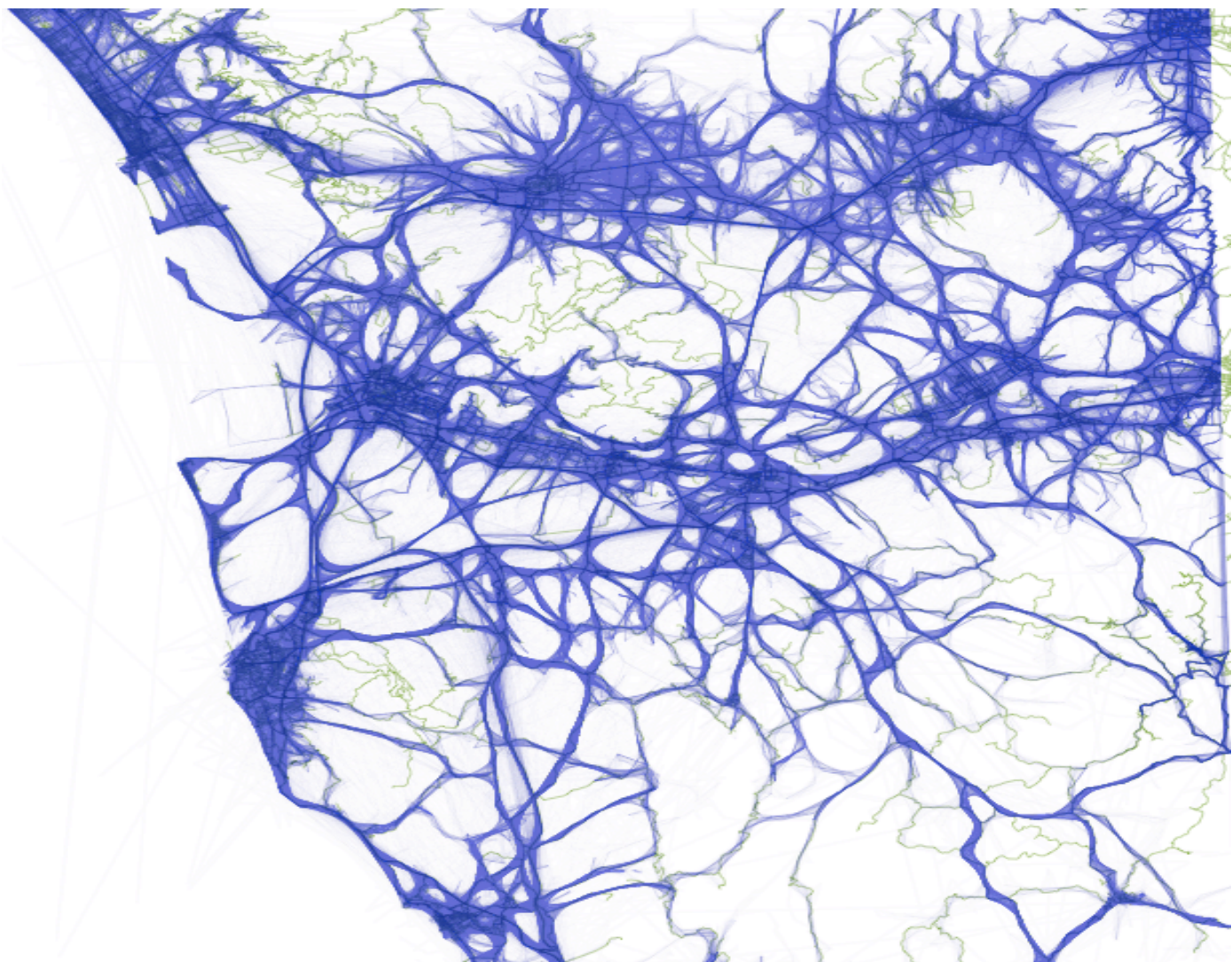
Fête de la Musique / mouvements des mobiles

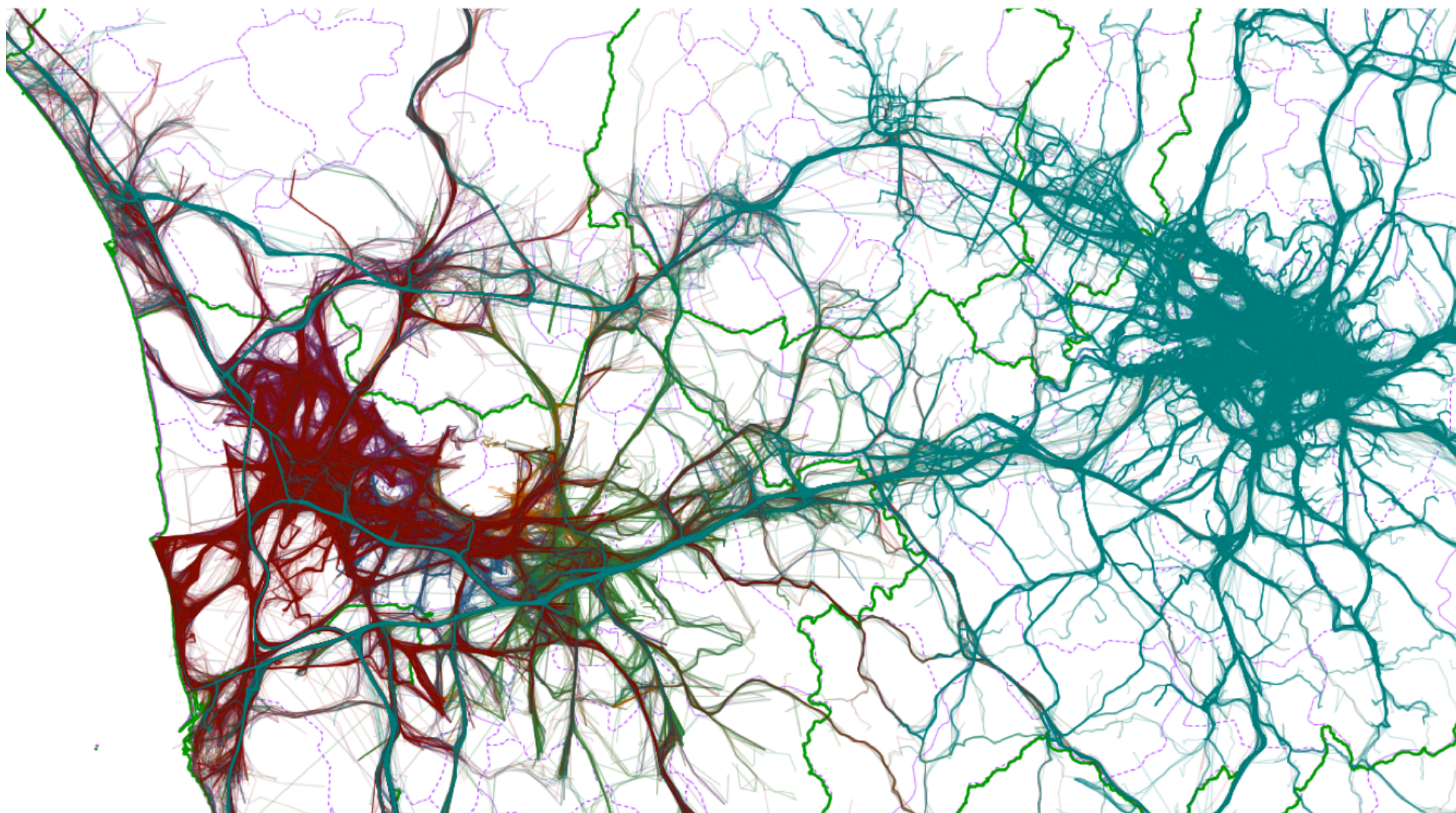
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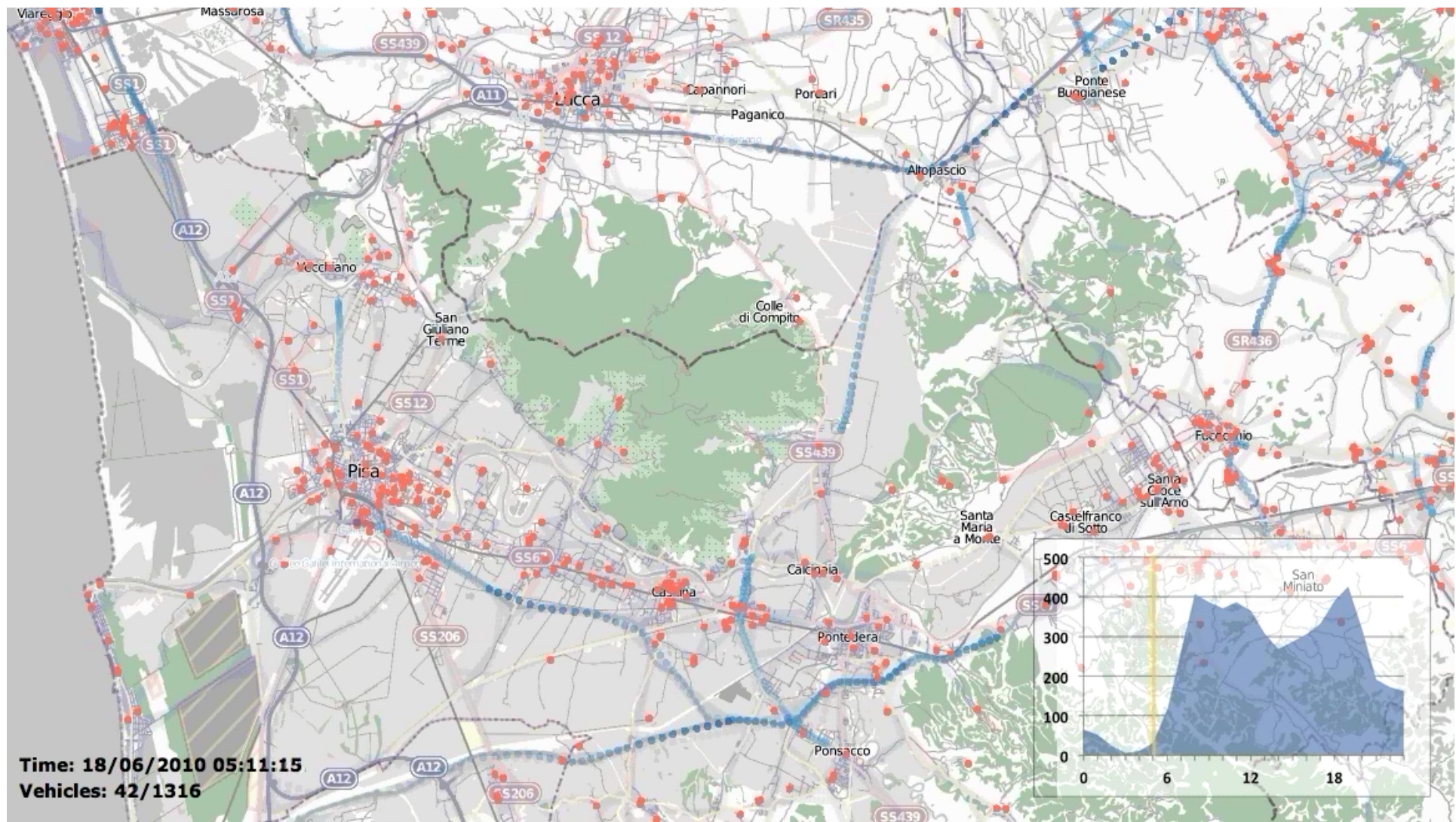


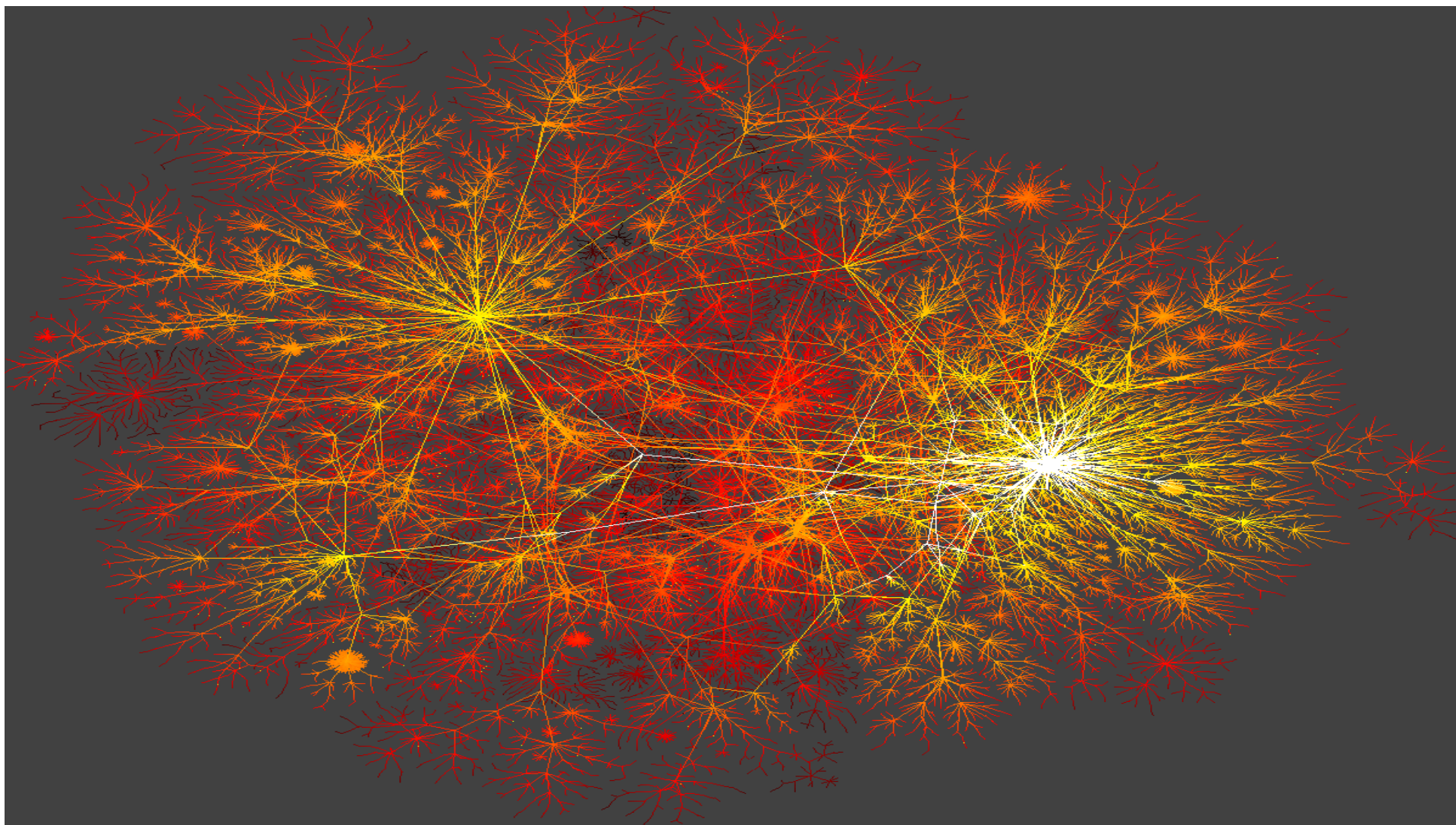
faberNovel



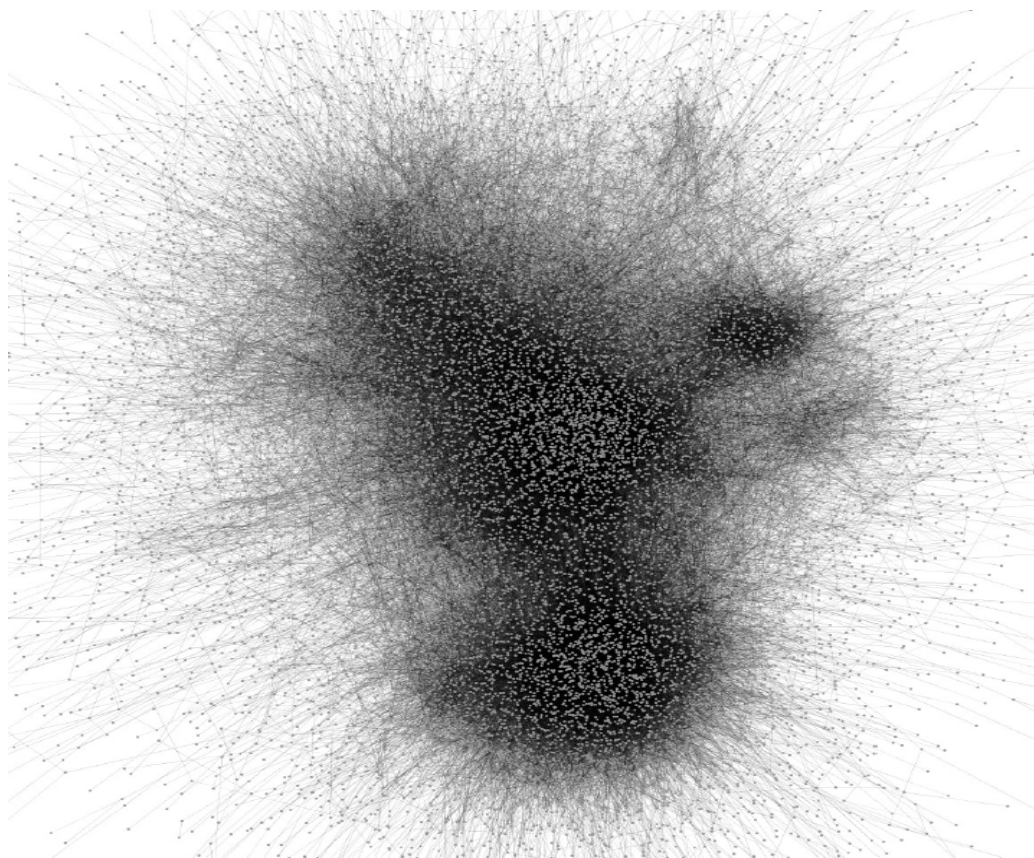


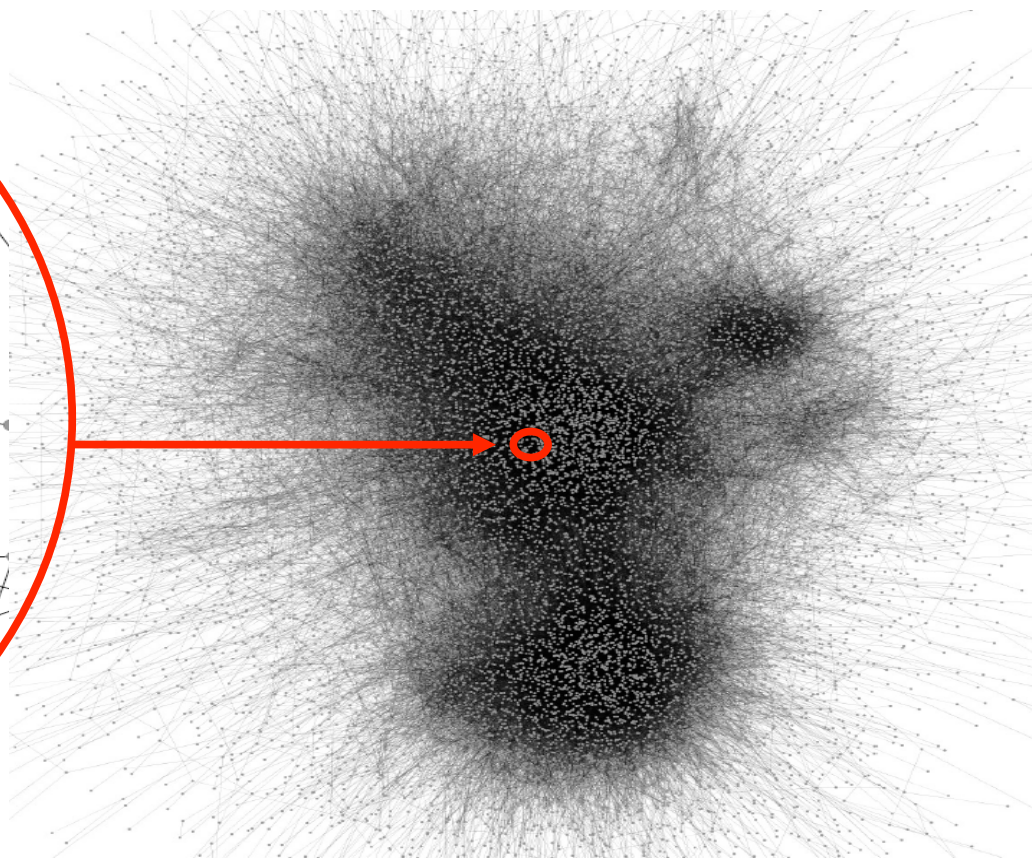
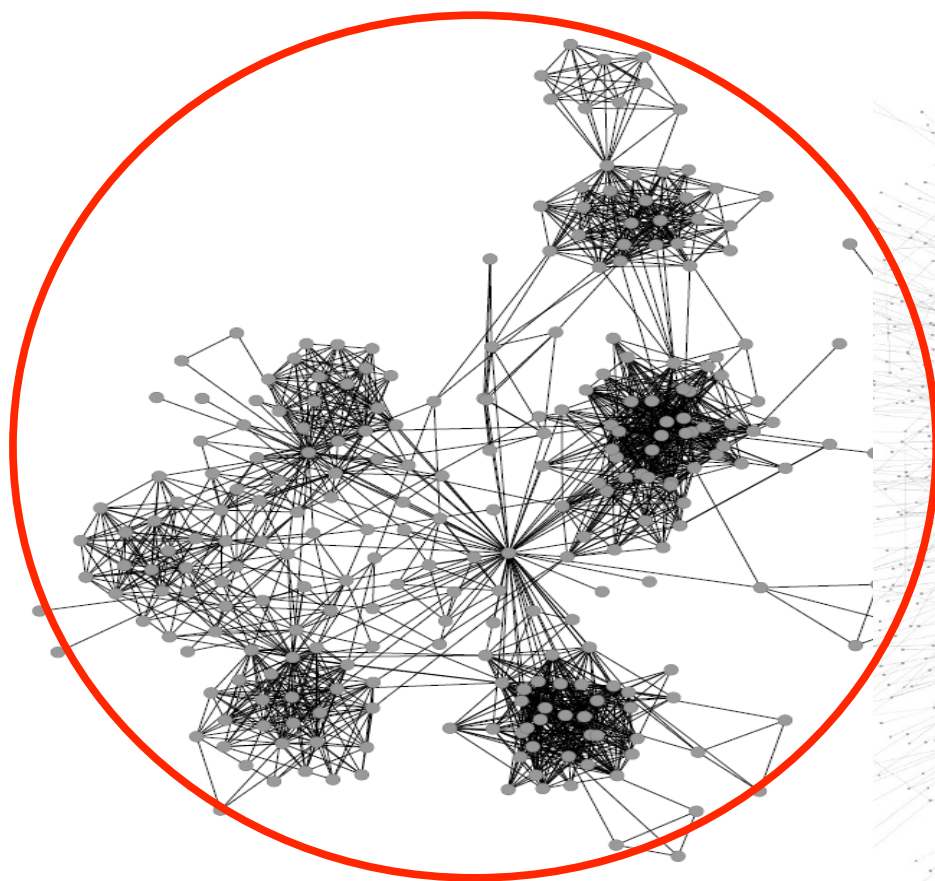














BIG DATA STORIES

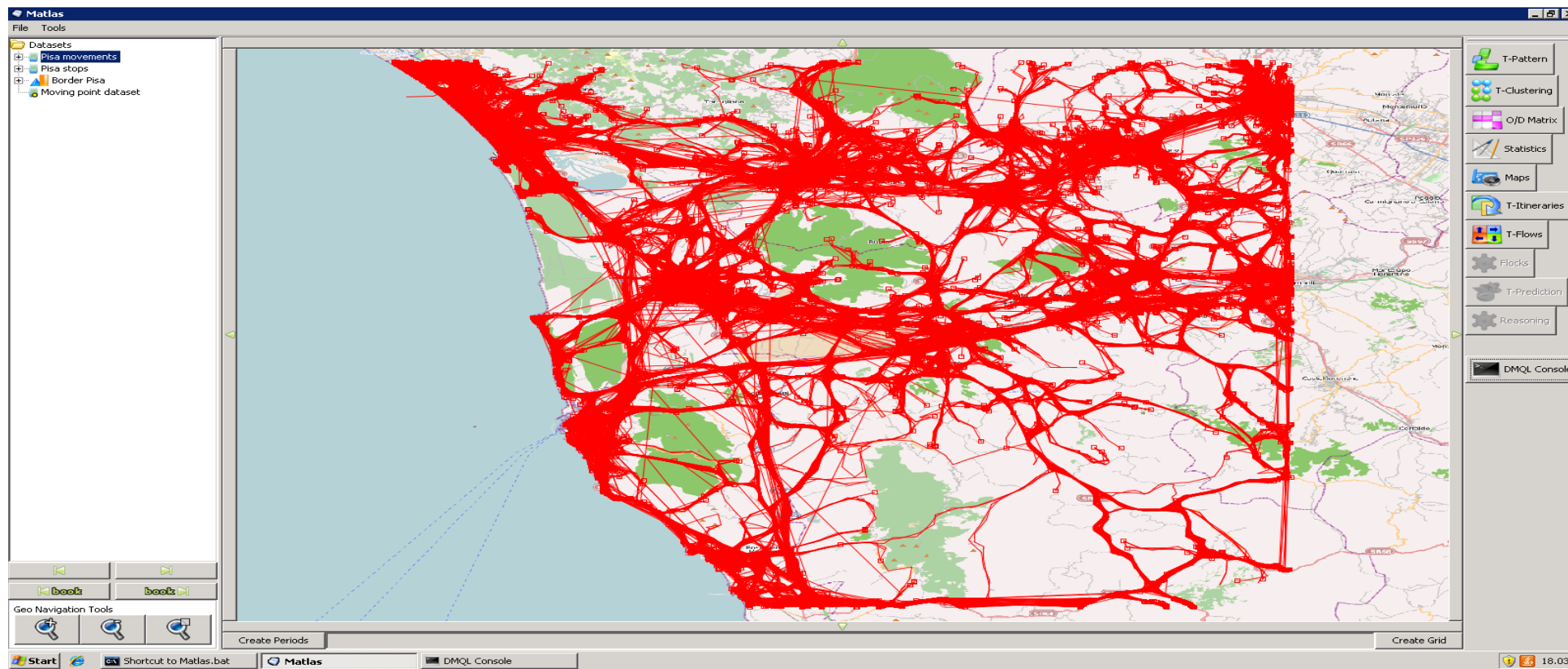
La Vita Nova, e-magazine de Il Sole 24 Ore
Fosca Giannotti, Dino Pedreschi

L'ATLANTE DELLA MOBILITÀ URBANA

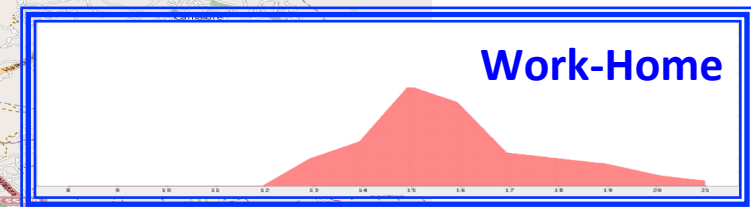
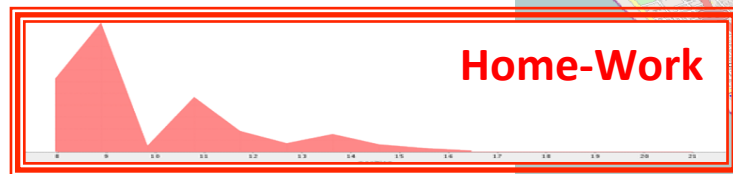
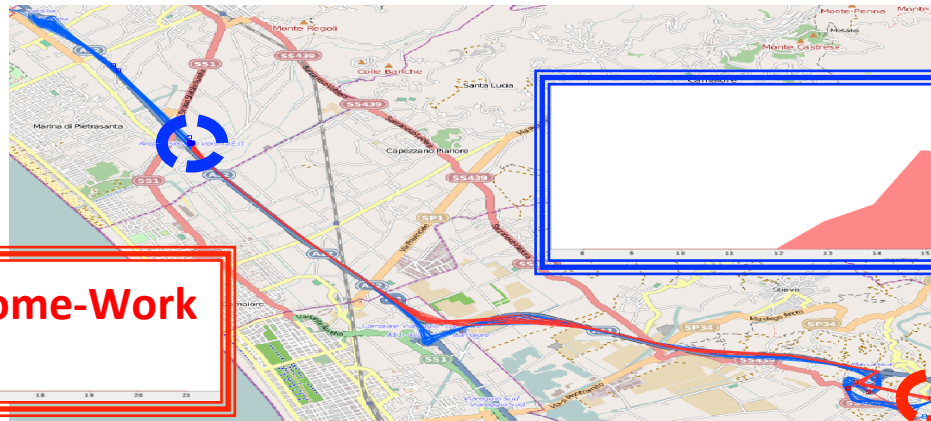
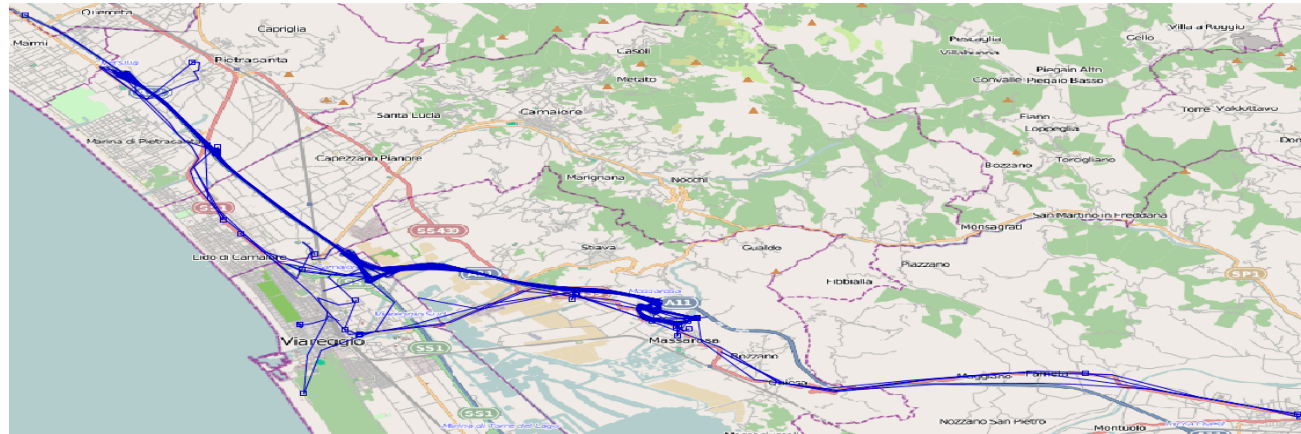
Partner: Octo Telematics,



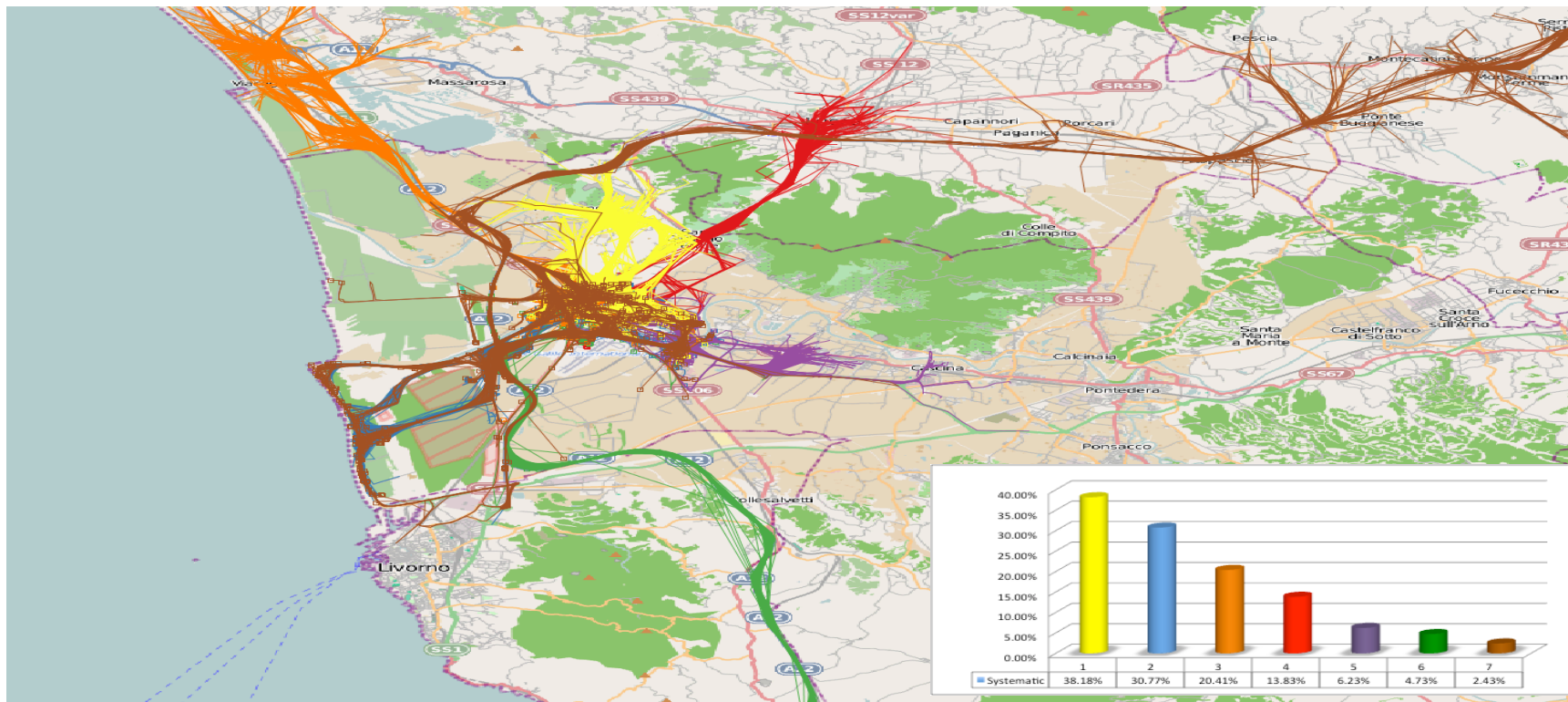
PA



Routine individuali

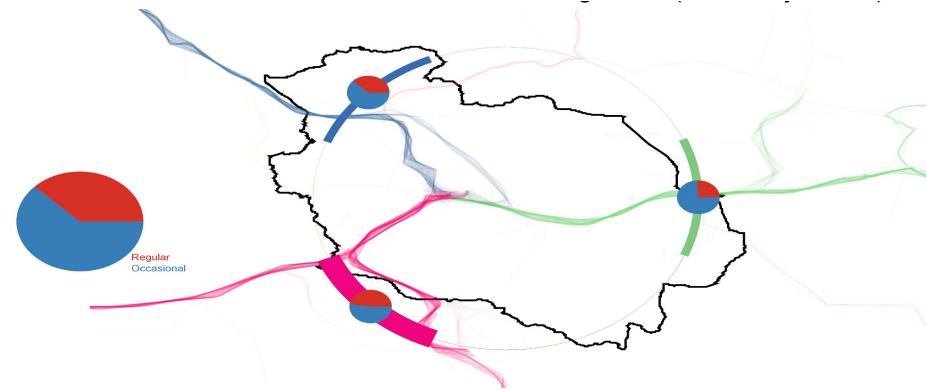
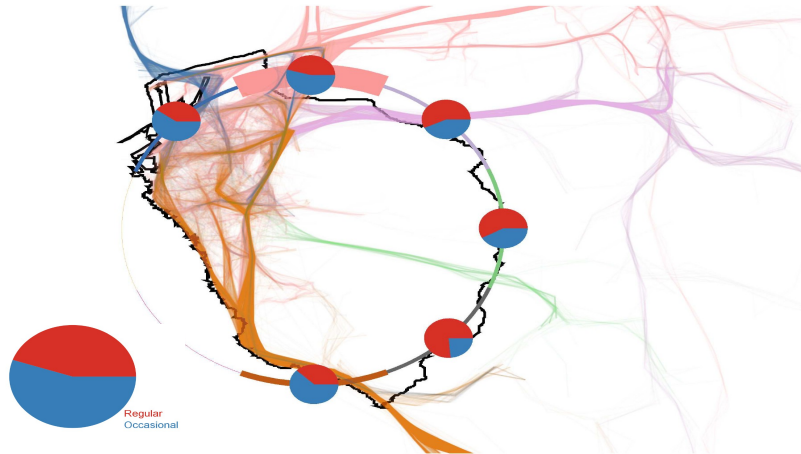
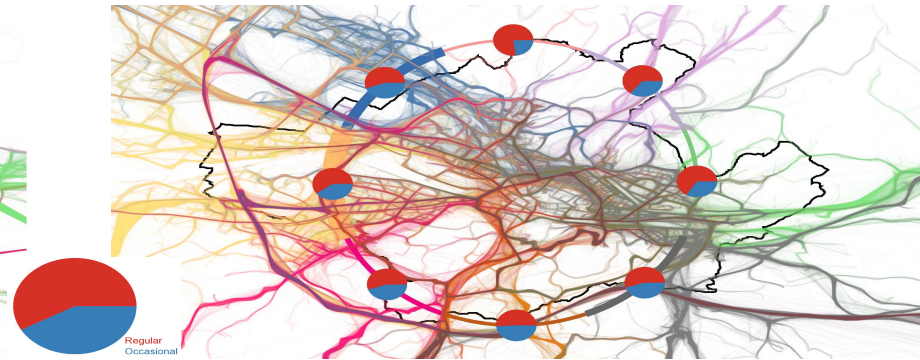
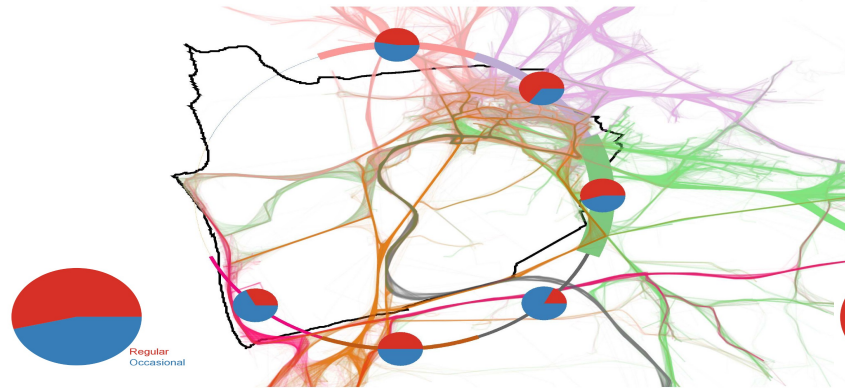


Movimenti sistematici collettivi



<http://kdd.isti.cnr.it/uma>

Urban Mobility Atlas

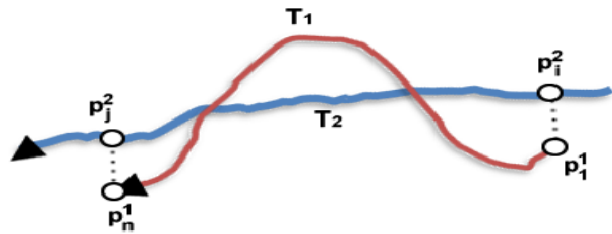




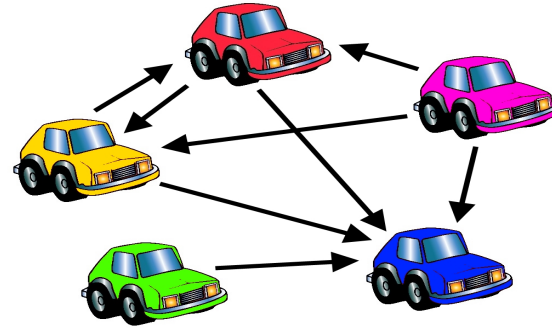
PROACTIVE CARPOOLING

Partner: Octo Telematics, PA

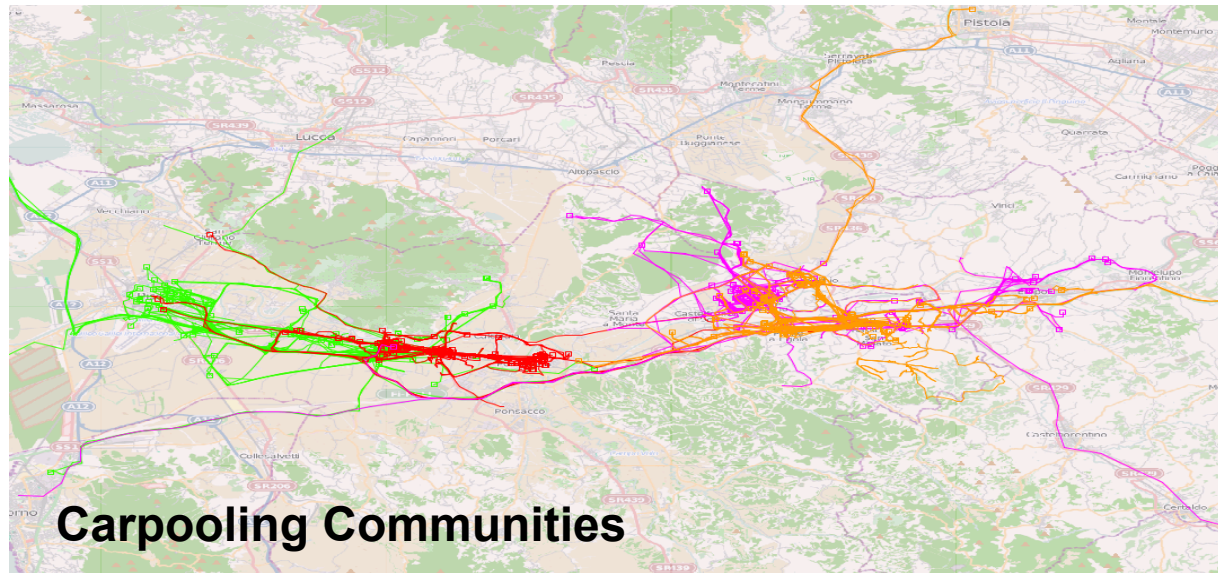
Car Pooling



Trajectory matching



Carpooling Network



Carpooling Communities

Carpooling potential

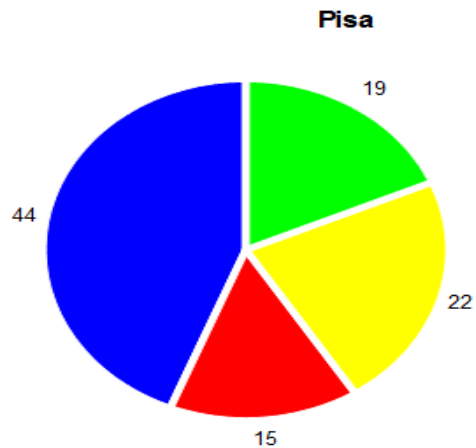
PISA

16467 users, 357137 trips

20% systematic trips

40% matching trips

142.740.060 saved Kms



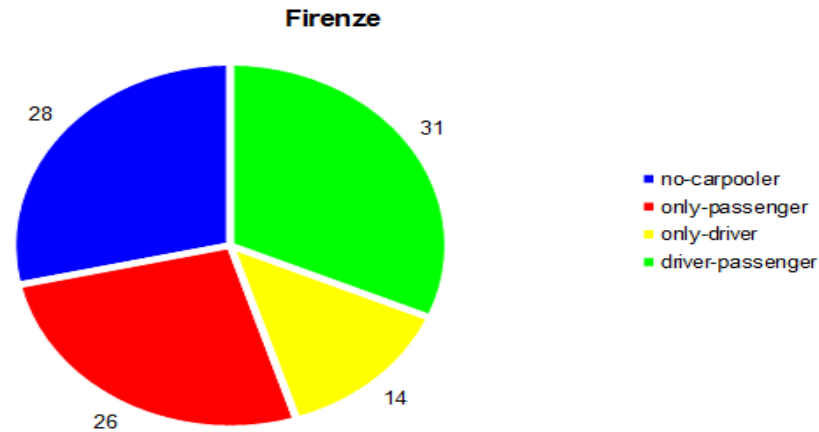
FLORENCE

34864 users, 1040872 trips

9% systematic trips

58% matching trips

220.802.240 saved Kms

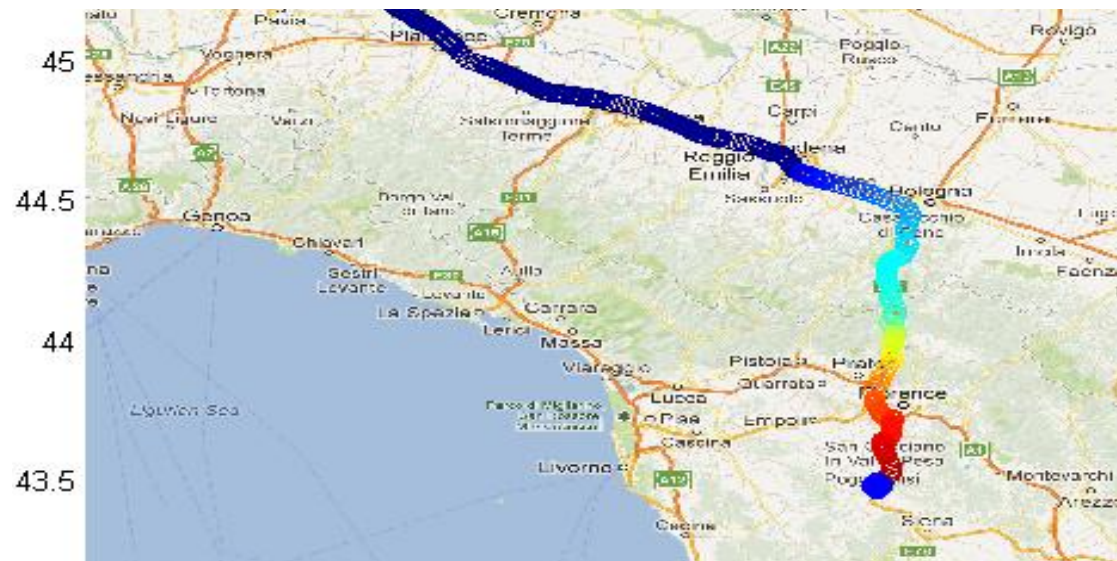




ELECTRIFIABILITY

Partner: Octo, PA

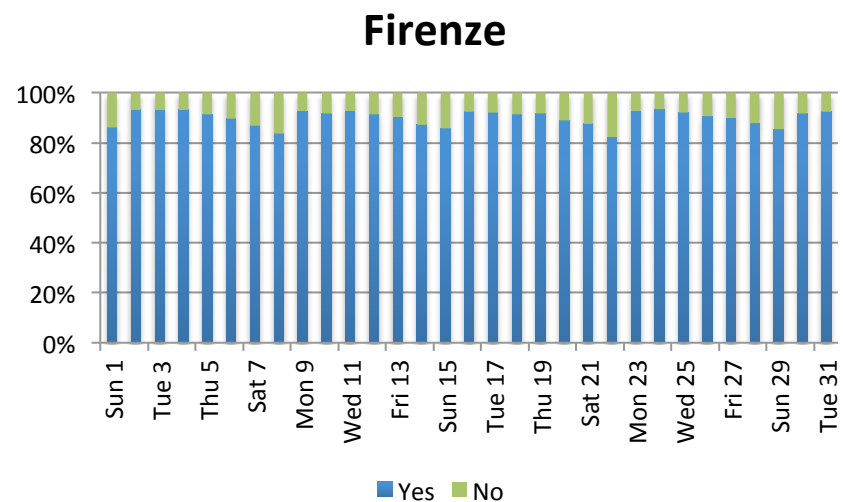
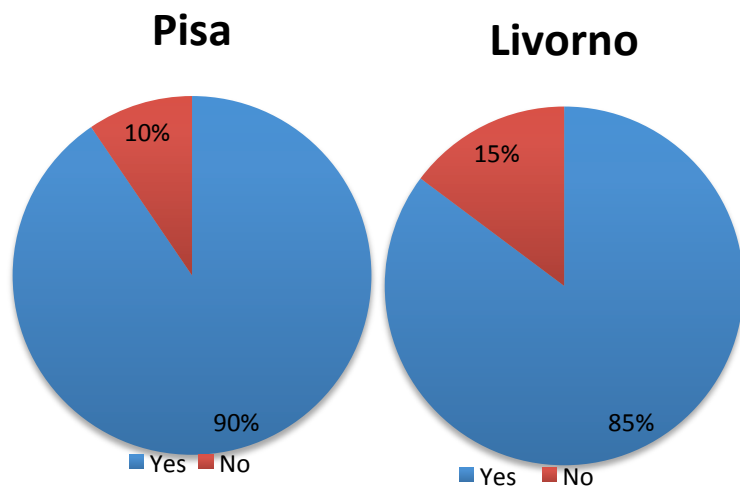
Electrifiability



90.5% of daily trips are electrifiable

In Tuscany 66% of users have a daily mobility 100% covered by an electrical vehicle (home to home)

Electrifiability index

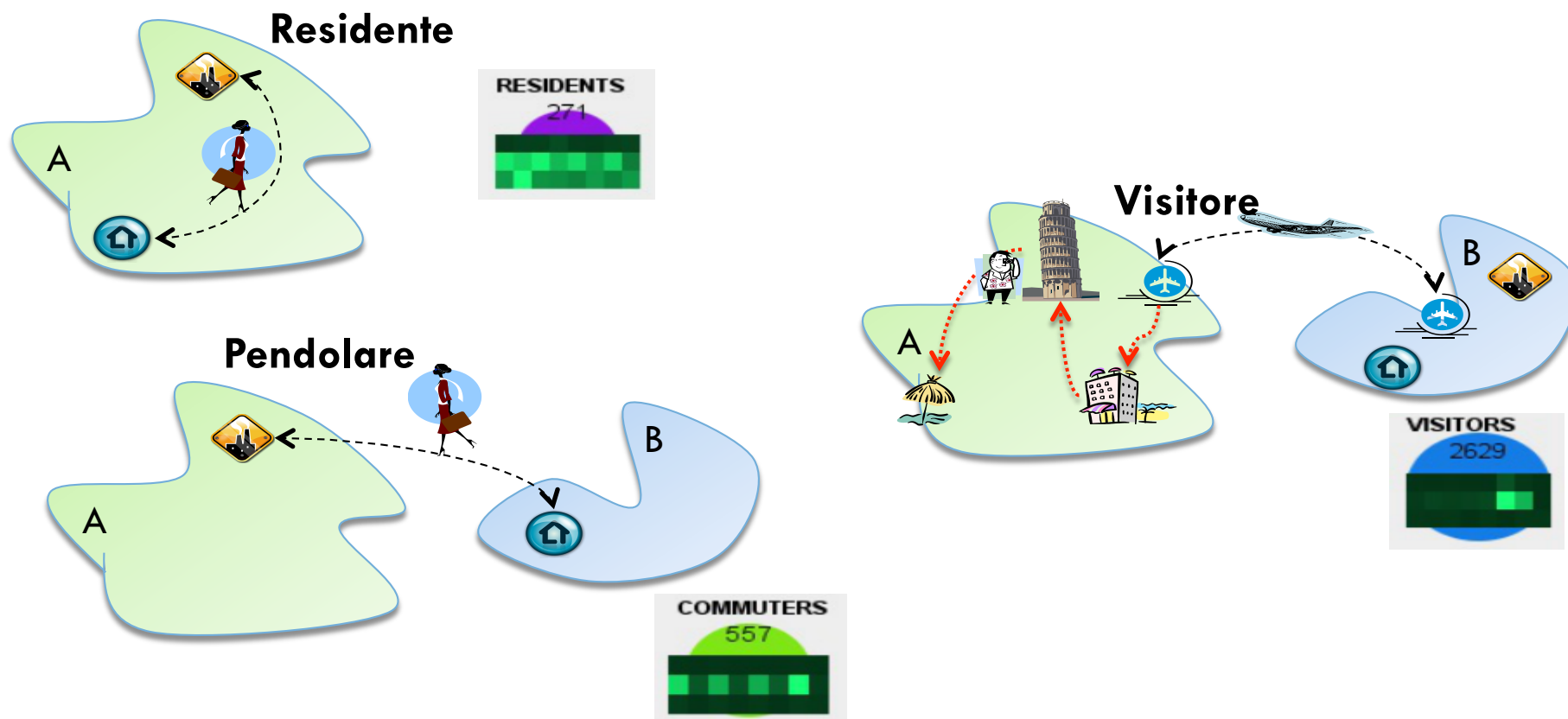




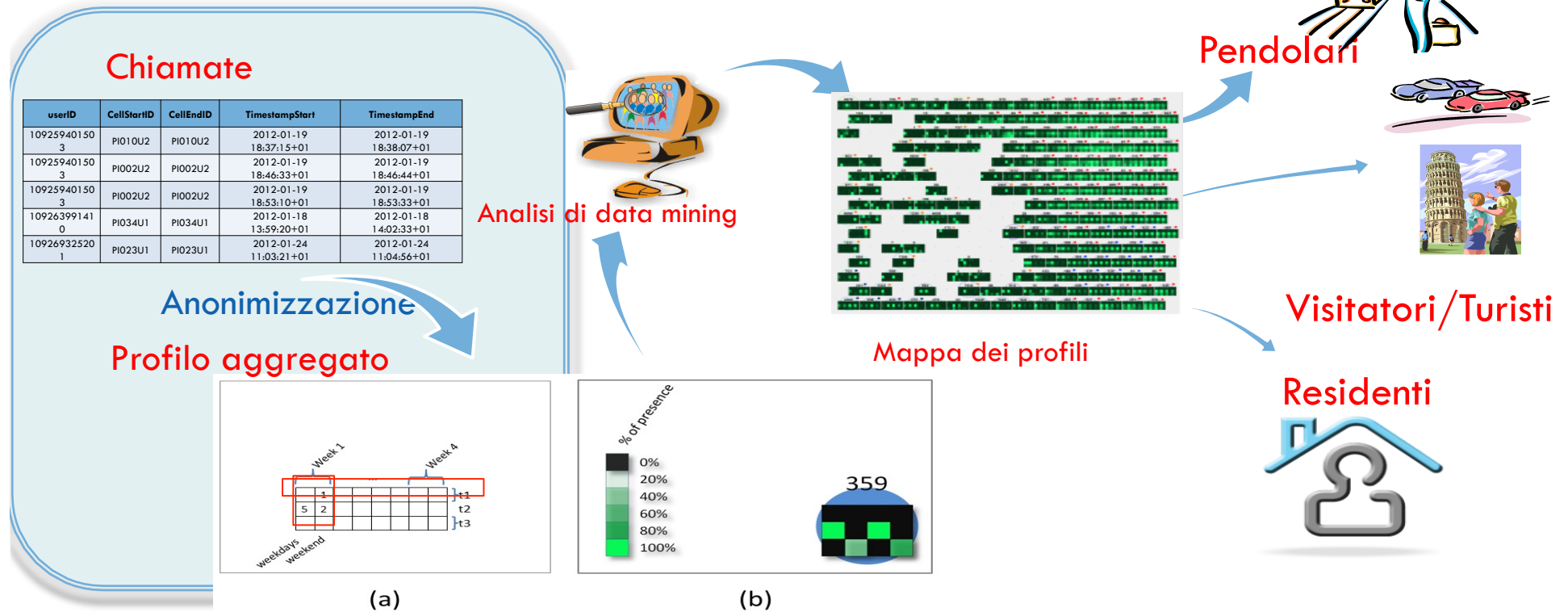
CITY USERS' SOCIOMETER

Partner:  Telecomunicazioni, PA, ISTAT

Dimmi come chiami...ti dirò chi sei!

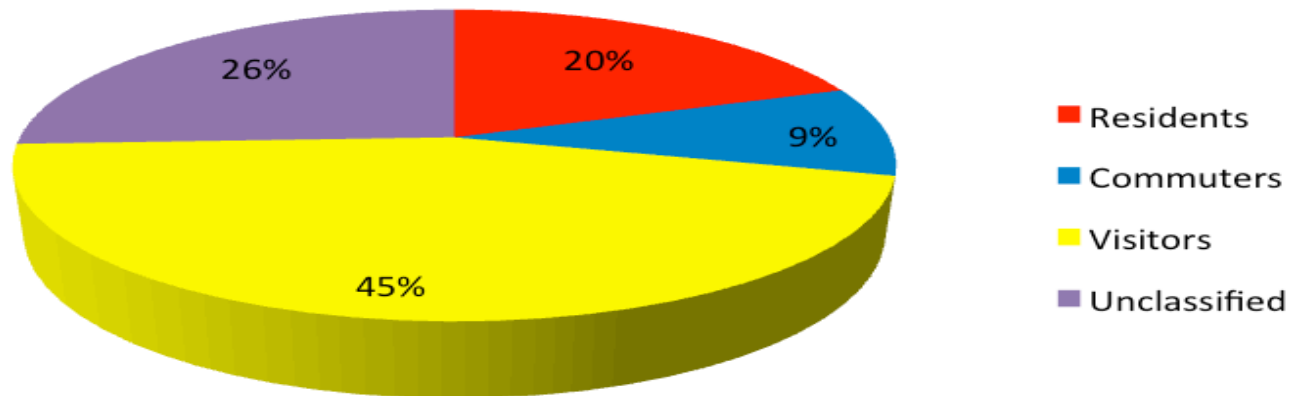


City User Sociometer



Urban Sociometer: the city user meter

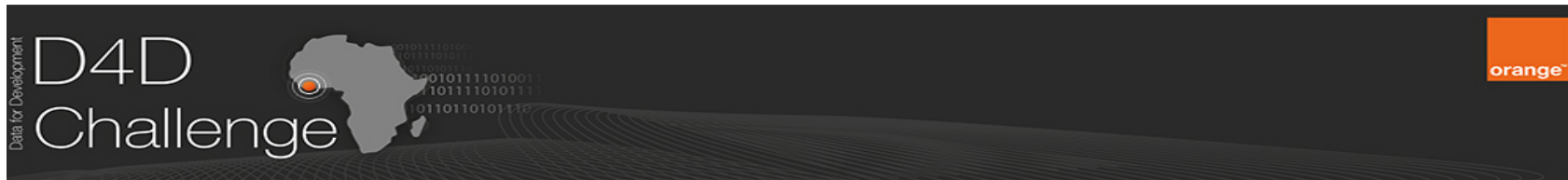
Classification outcome



Pisa january 2012

ISTAT – Commissione Big Data

- Measuring urban population and inter-city mobility using big data in an integrated approach
- Barbara Furletti, Lorenzo Gabrielli, Giuseppe Garofalo, Fosca Giannotti, Letizia Milli, Mirco Nanni, Dino Pedreschi, Roberta Vivio
- KDD LAB – Univ. Pisa & ISTI CNR, ISTAT
- SIS 2014 – 47° Simposio Italiano di Statistica



MP4-A Project: Mobility Planning For Africa

A joint work of  & 
kdd.isti.cnr.it www.goudappel.nl

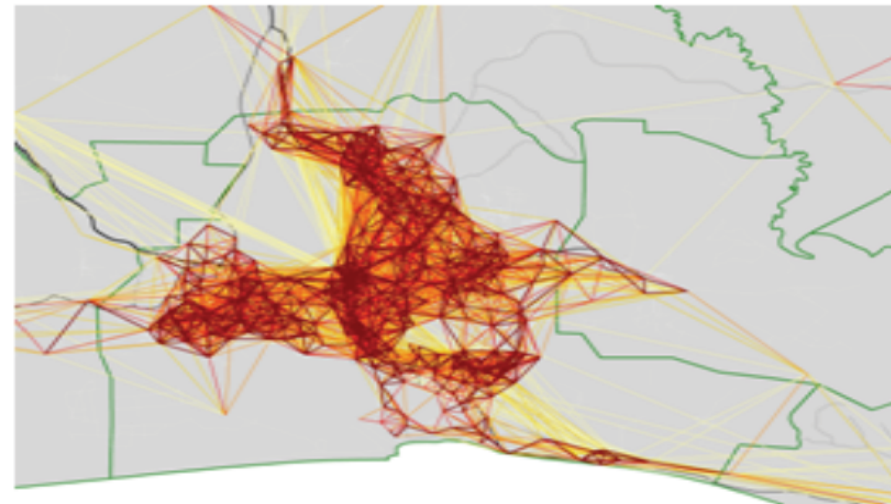
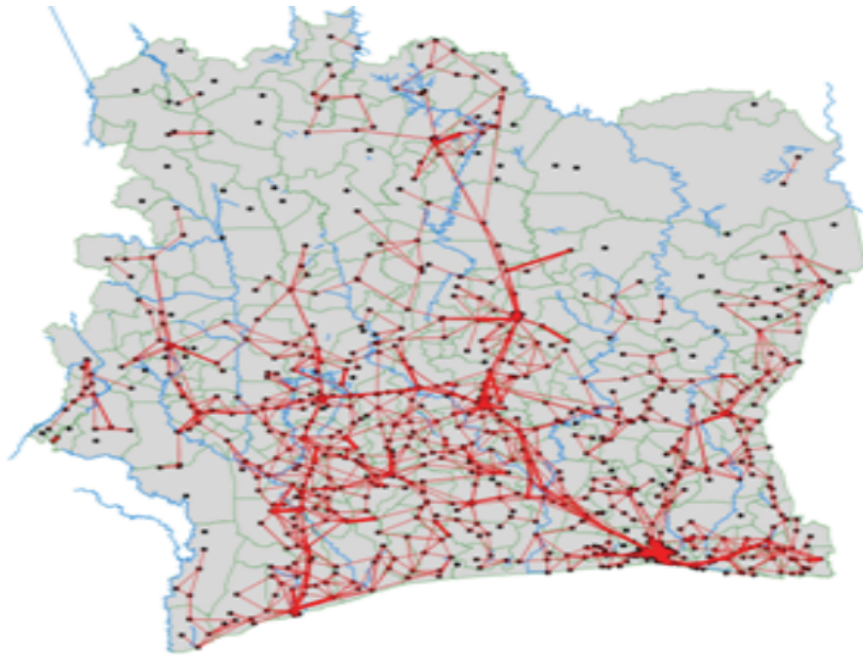


Figure 12: Mobile phone movements in Ivory Coast and Abidjan.

Mirco Nanni, Roberto Trasarti, et al.:

MP4-A Project: Mobility Planning for Africa. “Data for Development” Orange challenge, 2013

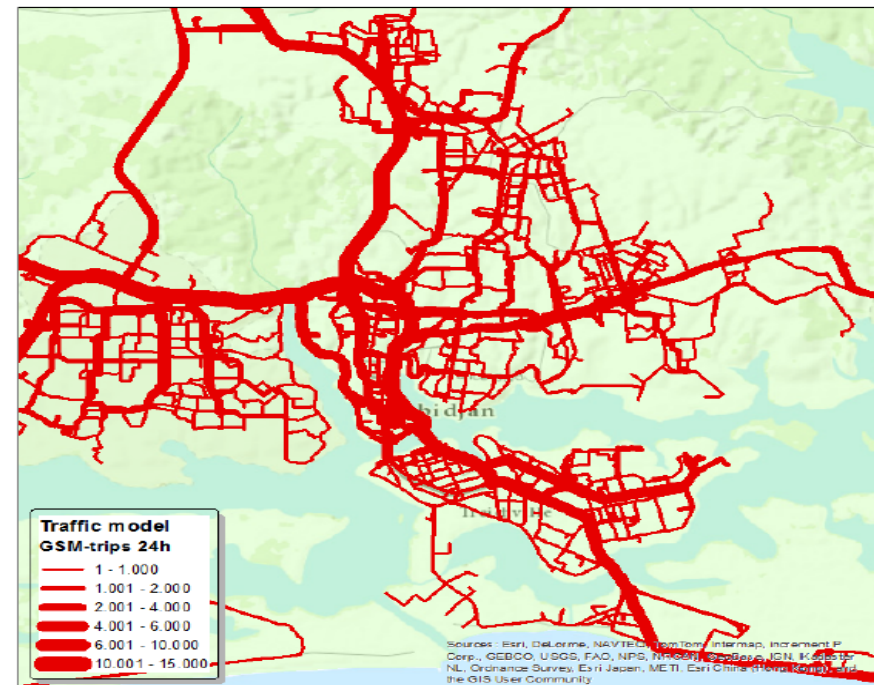
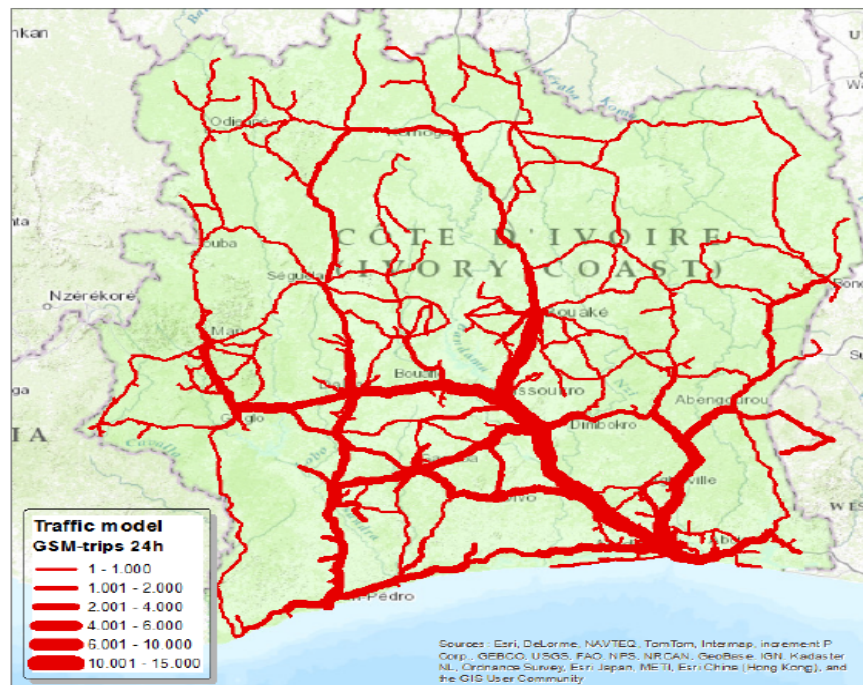


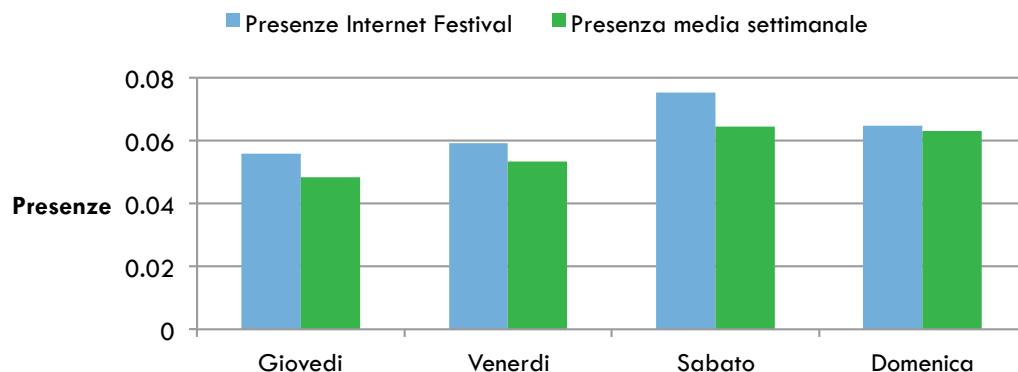
Figure 13: Traffic model for 24 hour period for Ivory Coast (left) and Abidjan Area (right)

Mirco Nanni, Roberto Trasarti, et al.:

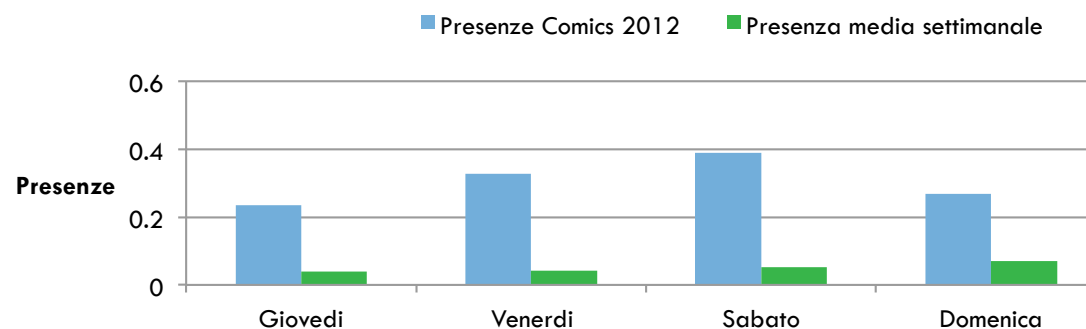
MP4-A Project: Mobility Planning for Africa. “Data for Development” Orange challenge, 2013

Measuring exceptional events

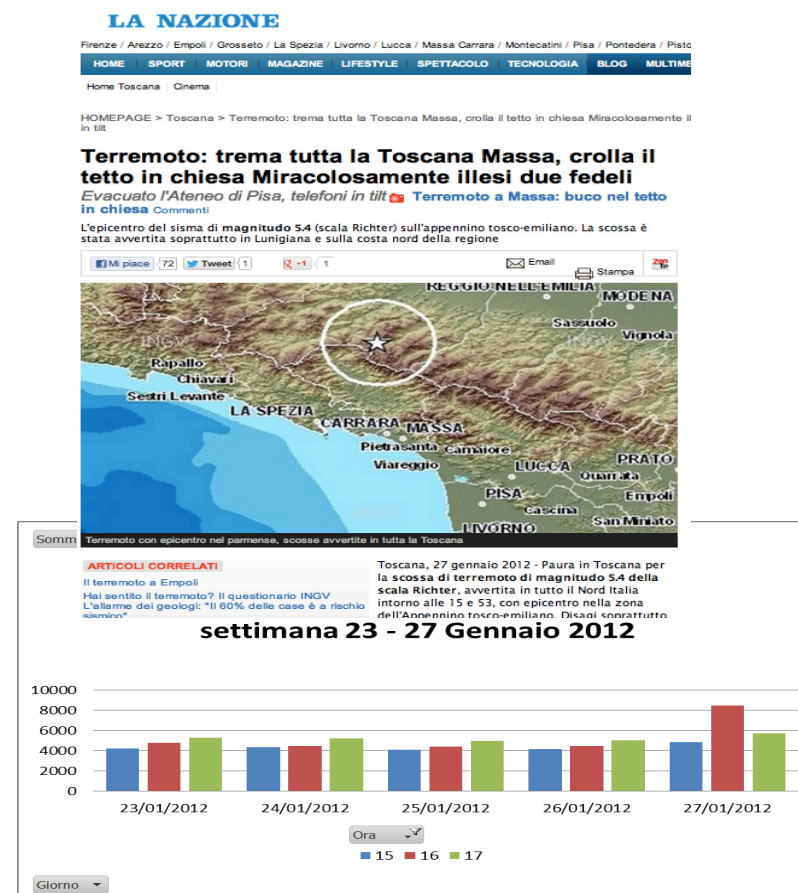
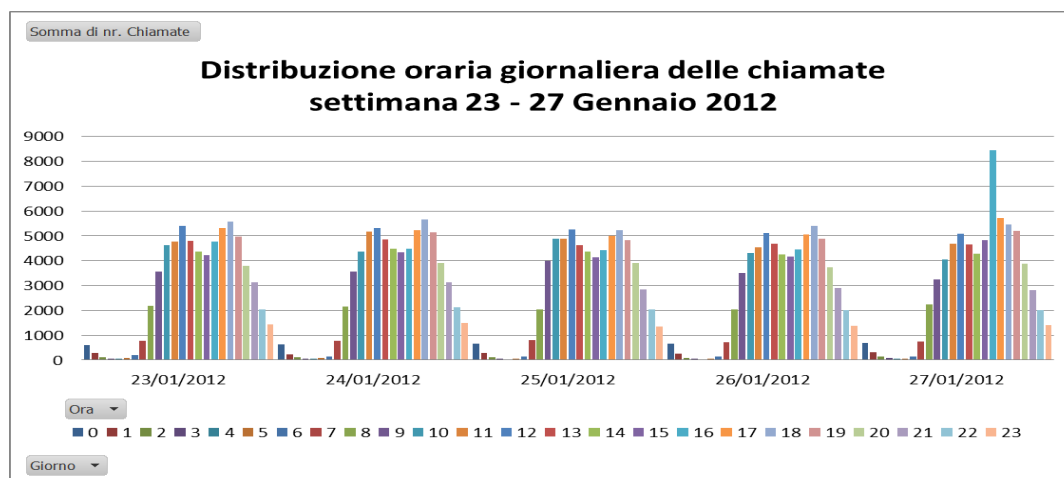
Presence of Visitors GSM - Pisa - Historical Center



Presence of Visitors GSM - Lucca Comics 2012

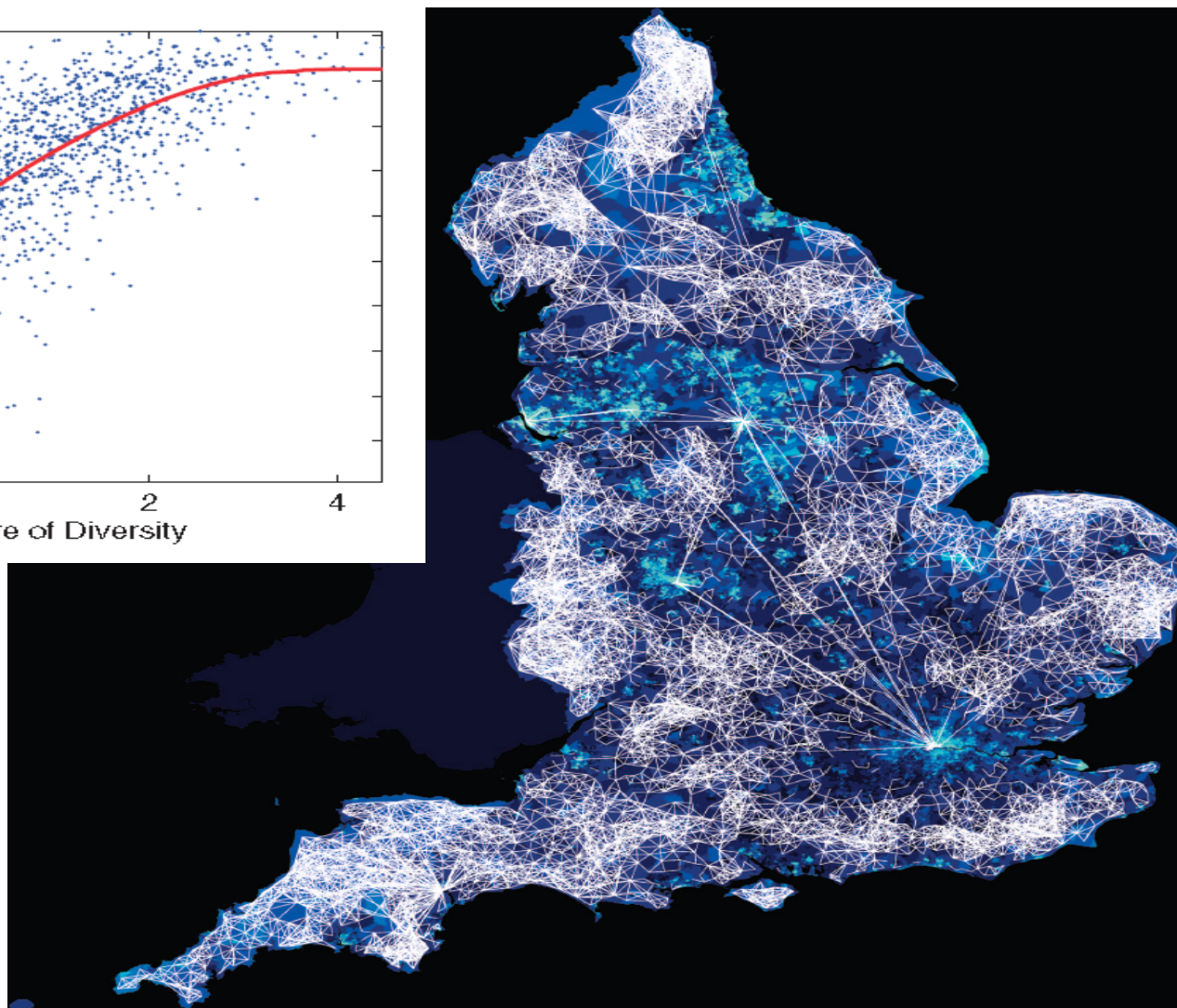
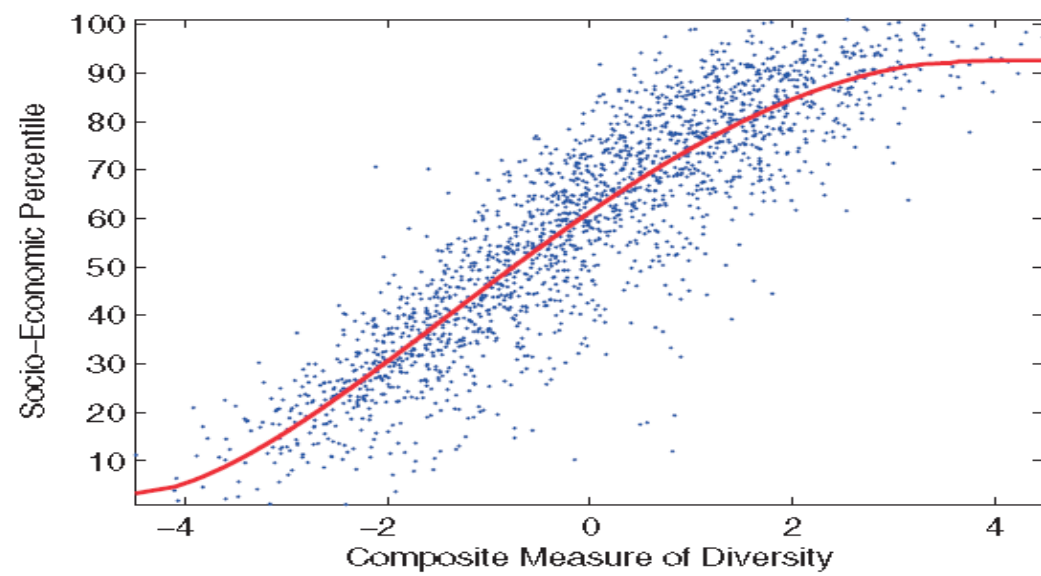


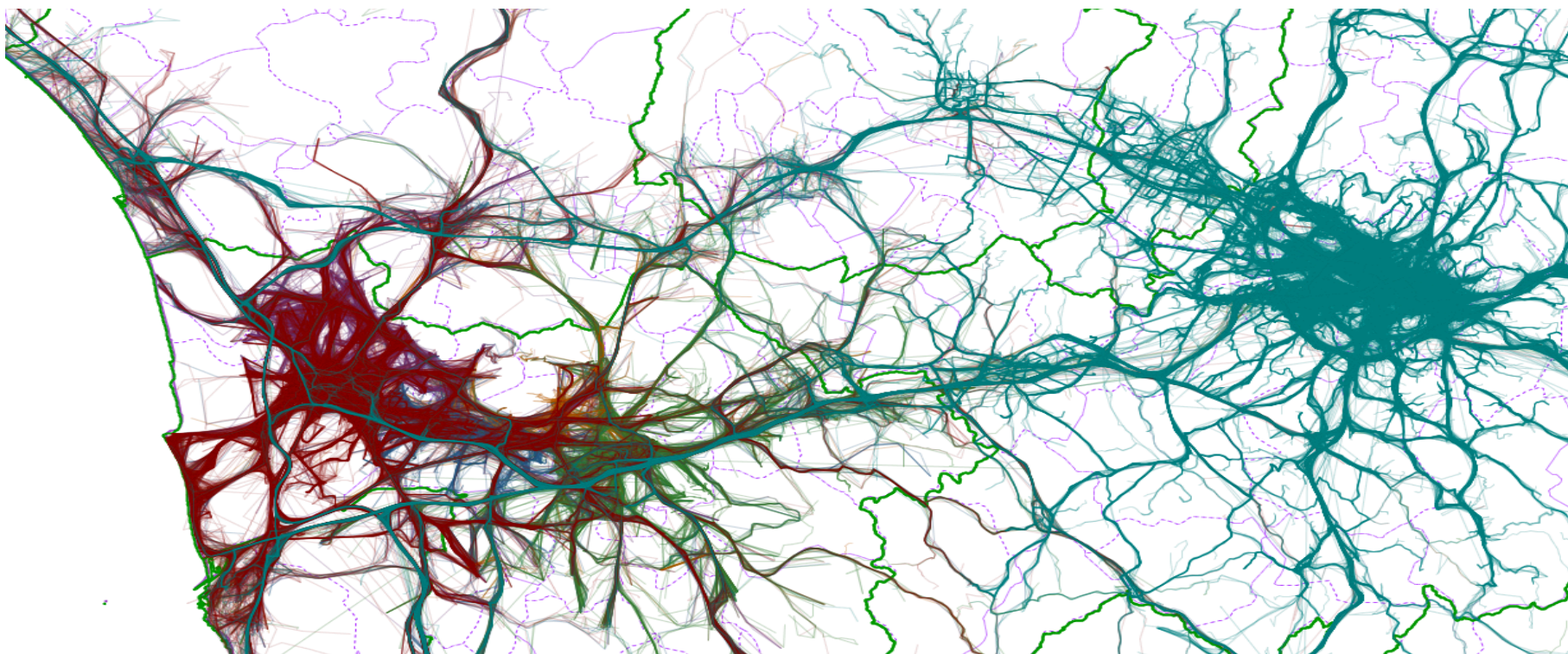
Extraordinary events

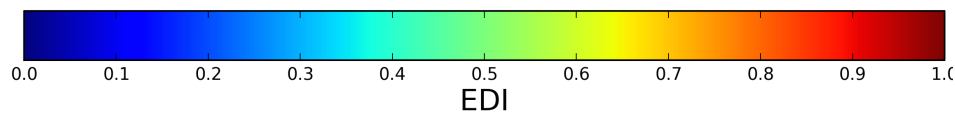
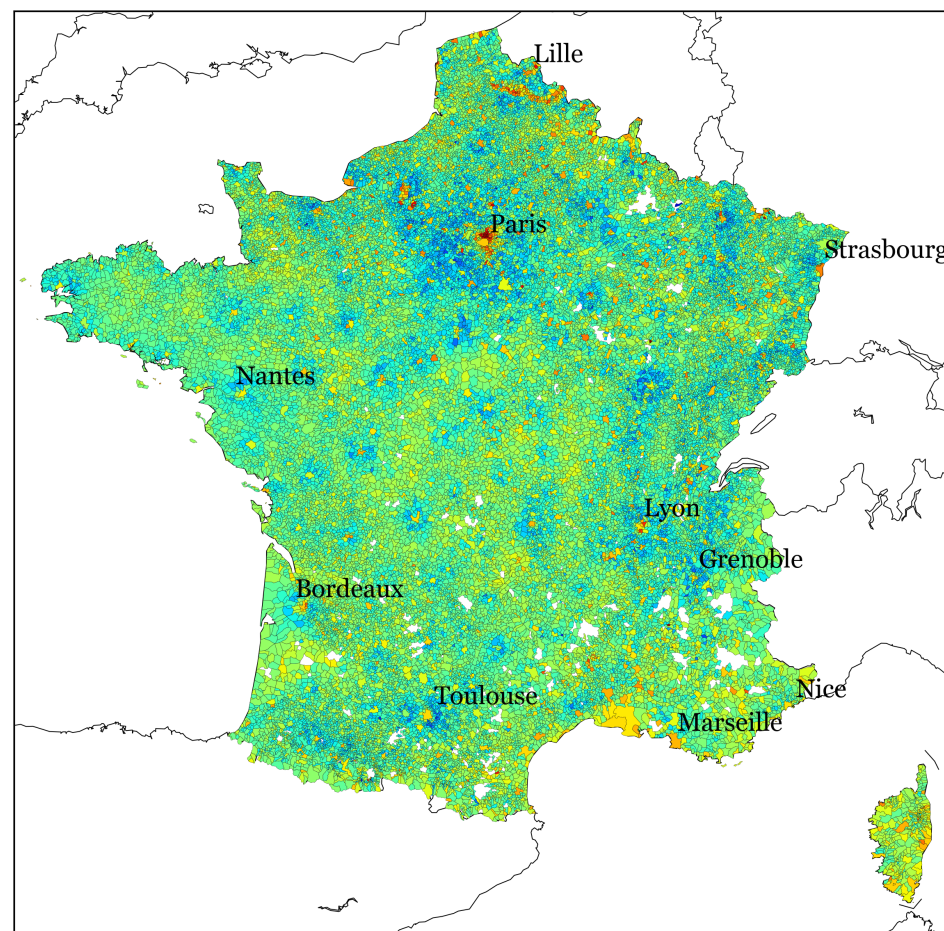
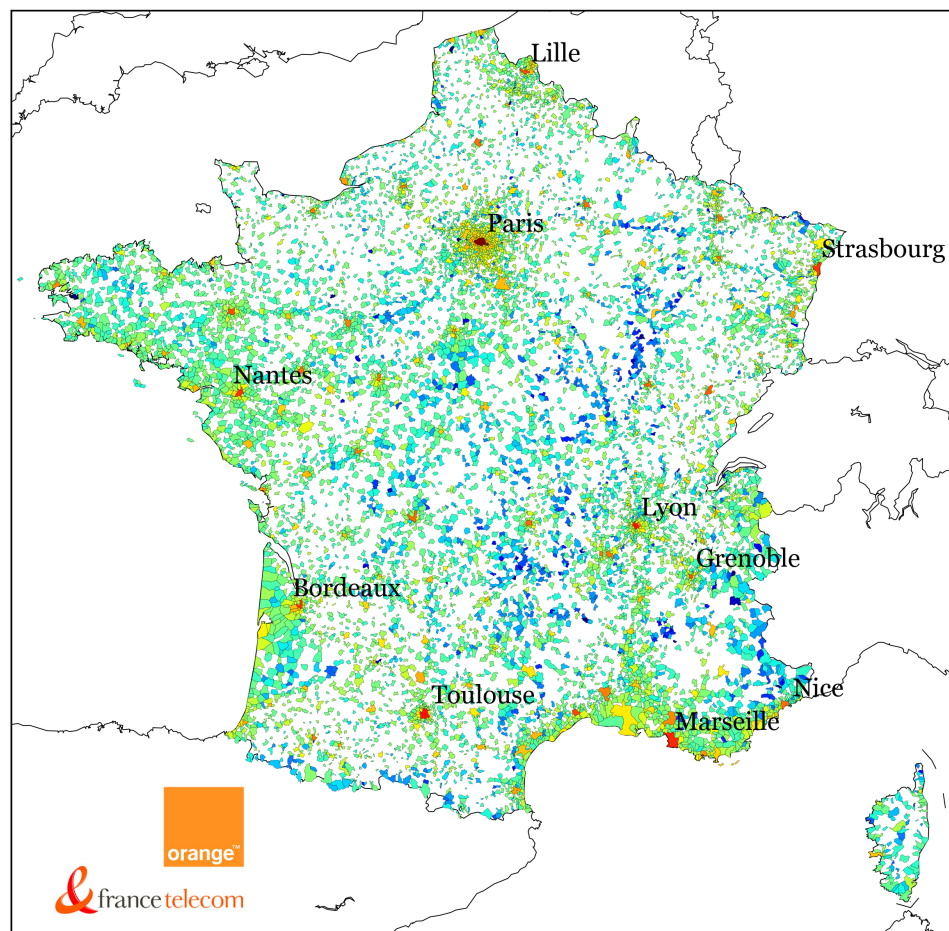


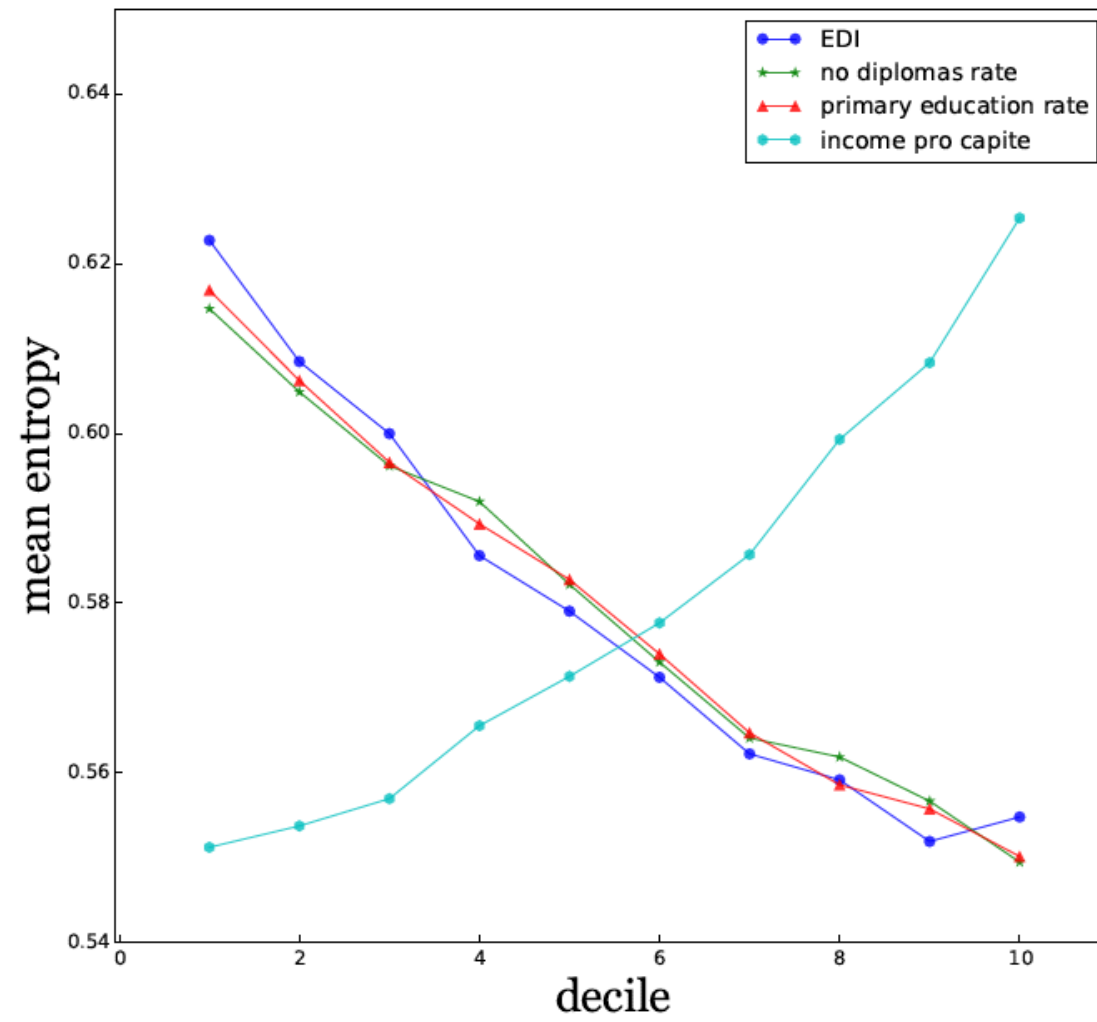
DIVERSITA' E BENESSERE

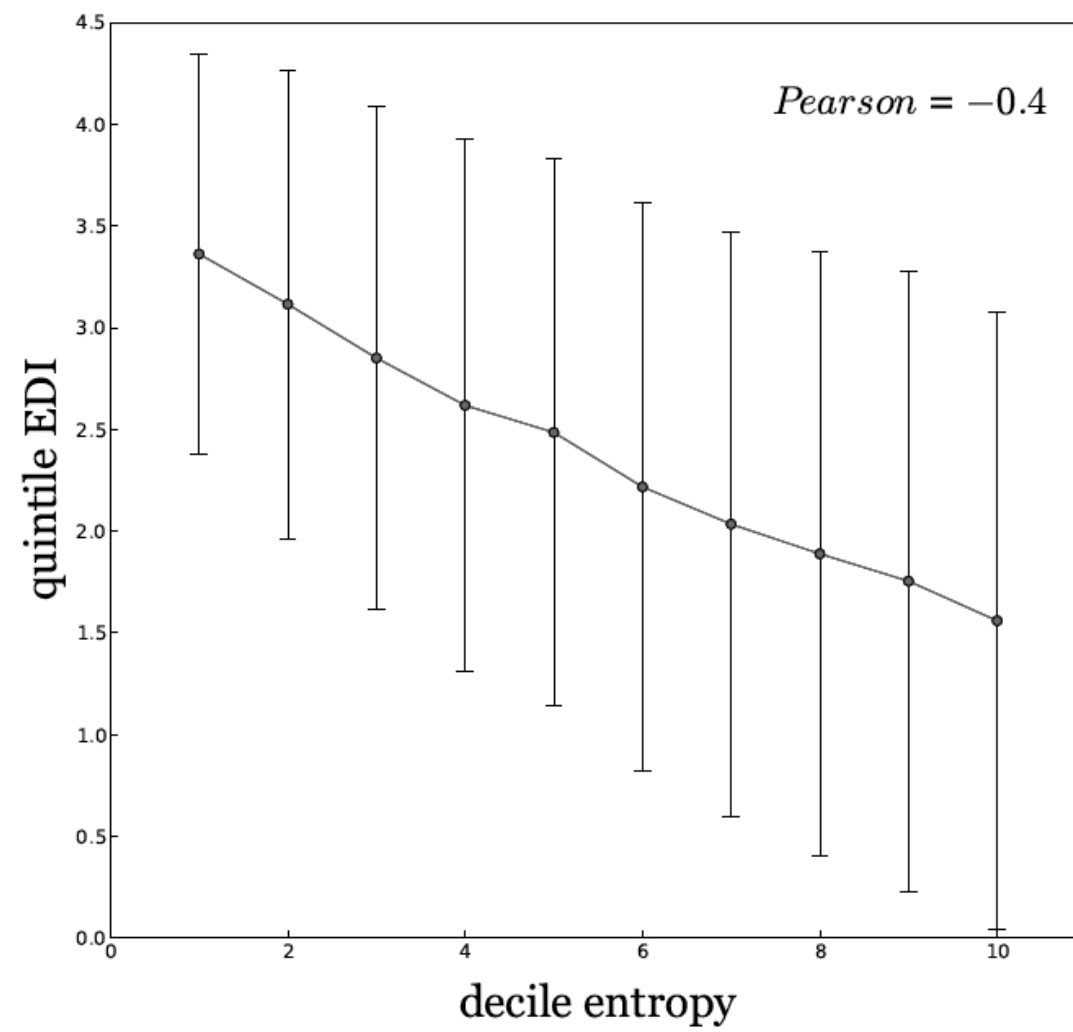
Partner: Octo, WIND, Orange Telecom





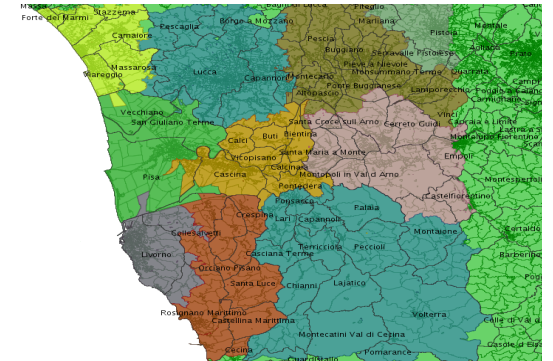
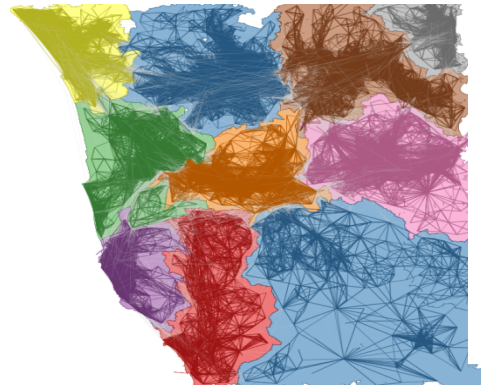
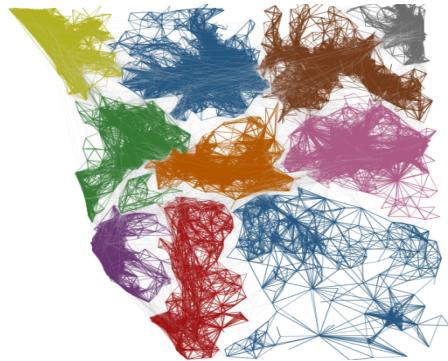
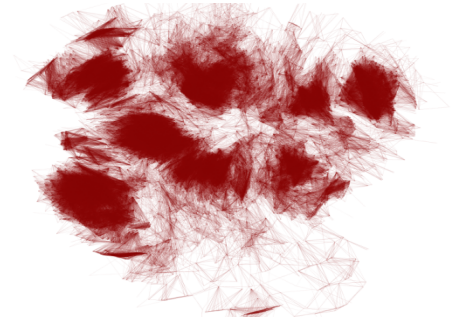
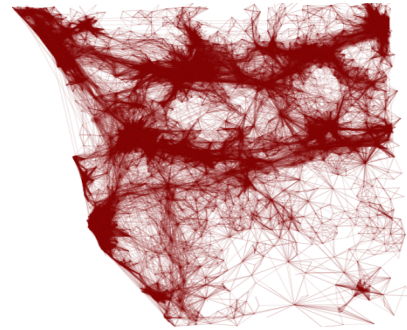
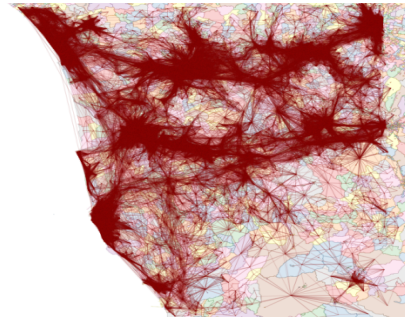
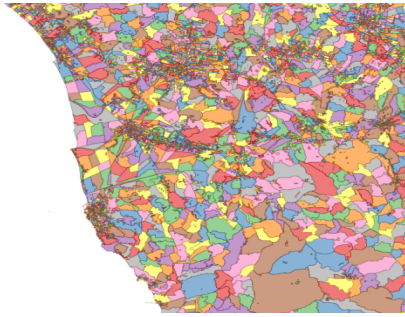


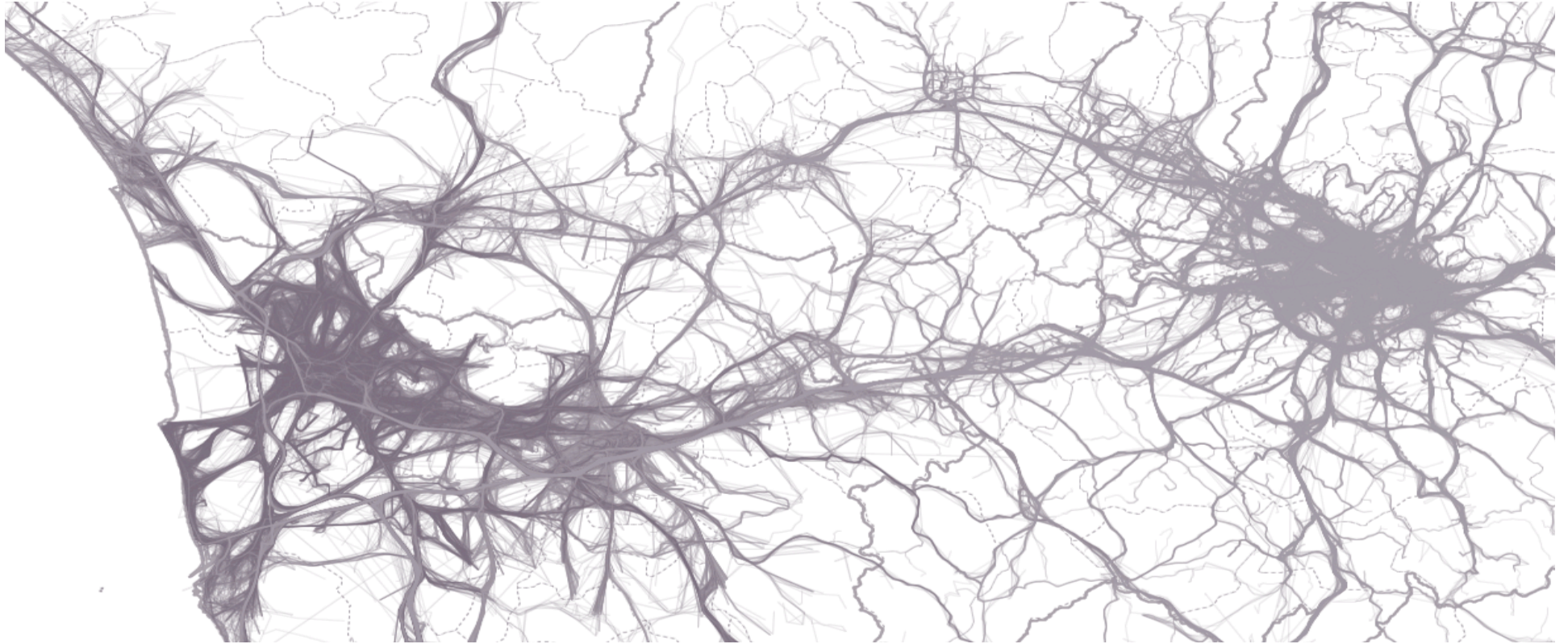




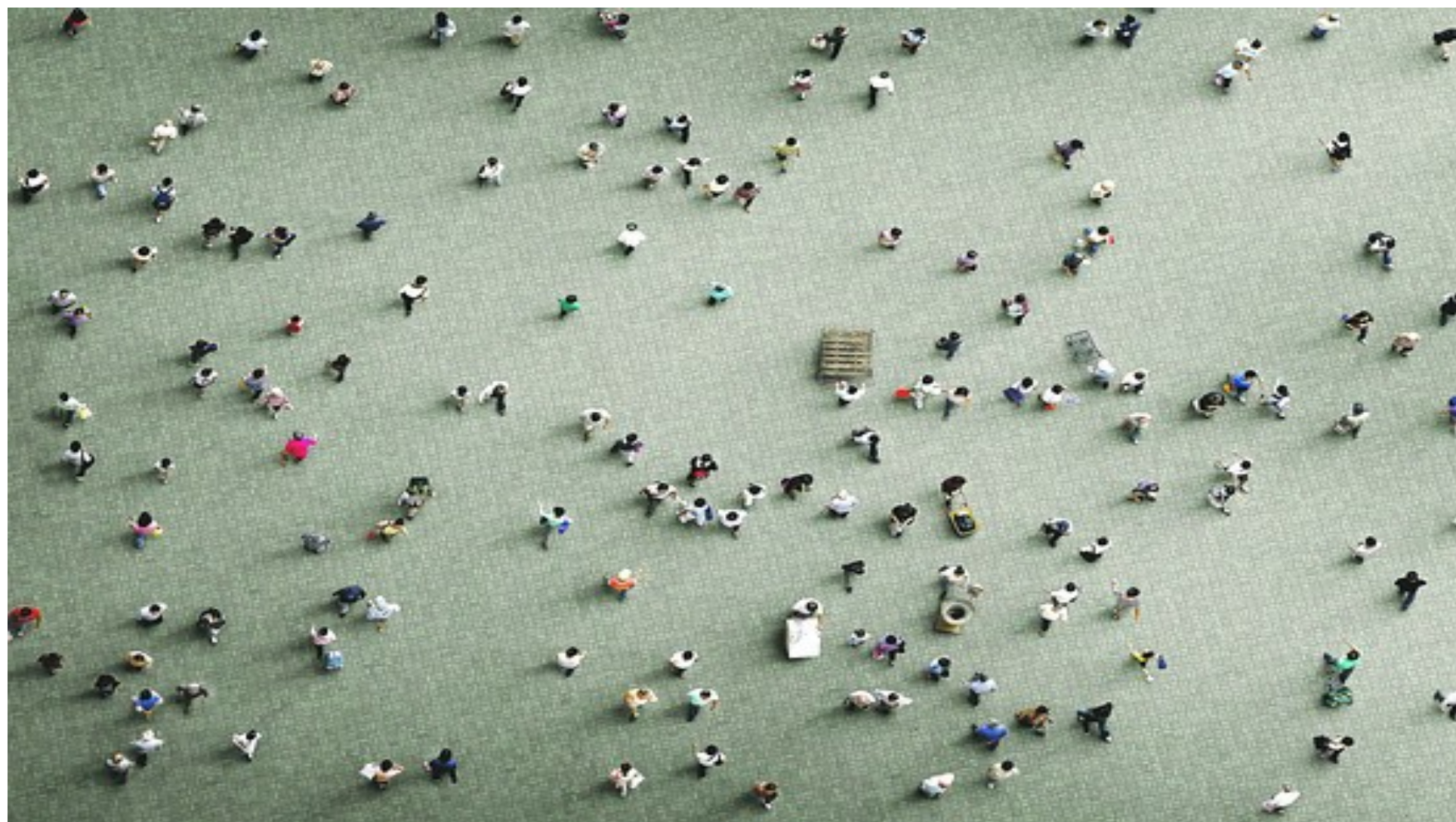
I CONFINI DELLA MOBILITA'







big data | bene comune



Personal Data: The Emergence of a New Asset Class



- “Personal data is the new oil of the Internet and the new currency of the digital world”
- ▣ Maglena Kuneva, former European Commissioner of Consumer Protection

Who's got the big benefits so far?

- A few **latifundists of data**

- **GAFA**



- ▣ Profiling for behavioral advertising and target marketing

- **NSA**



- ▣ Profiling for discovering potential terrorists
 - ▣ Mass surveillance ... STASI_2.0

BIG DATA EUROPEO

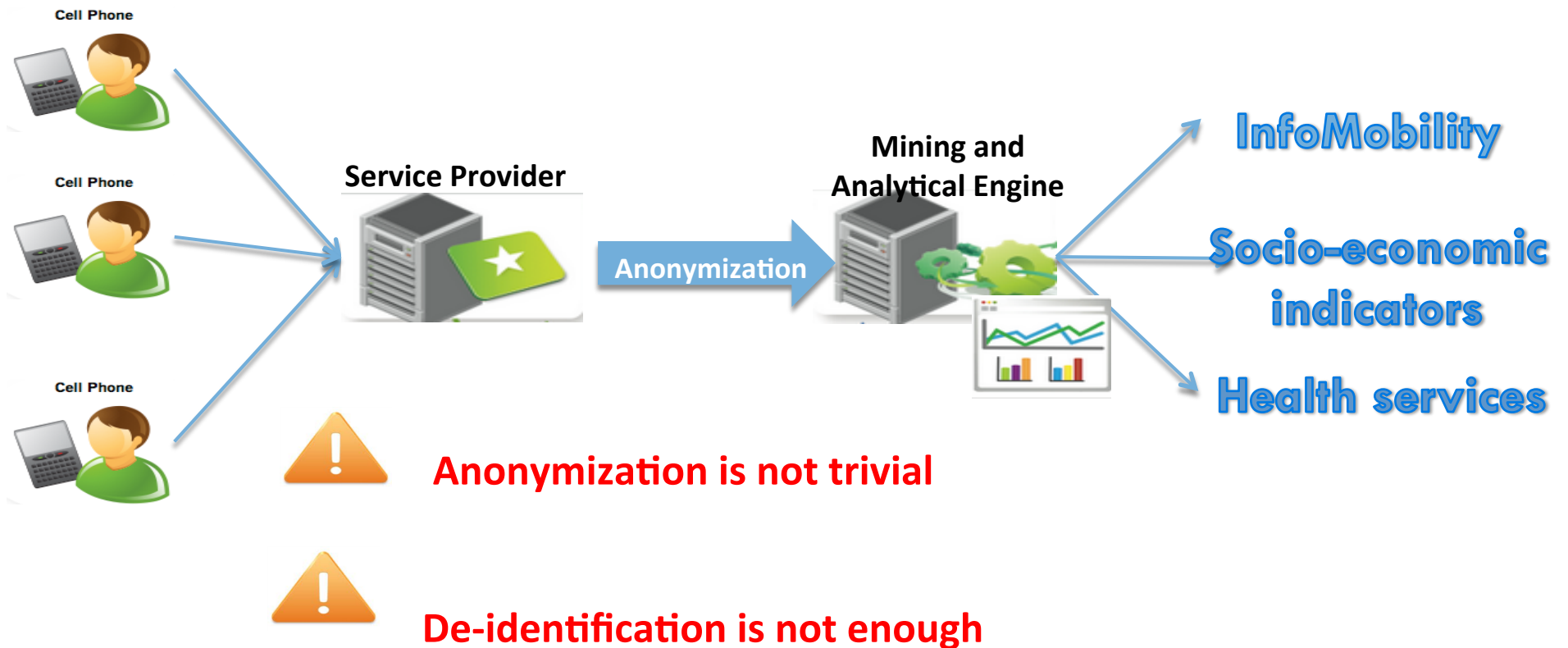
PRIVACY-BY-DESIGN



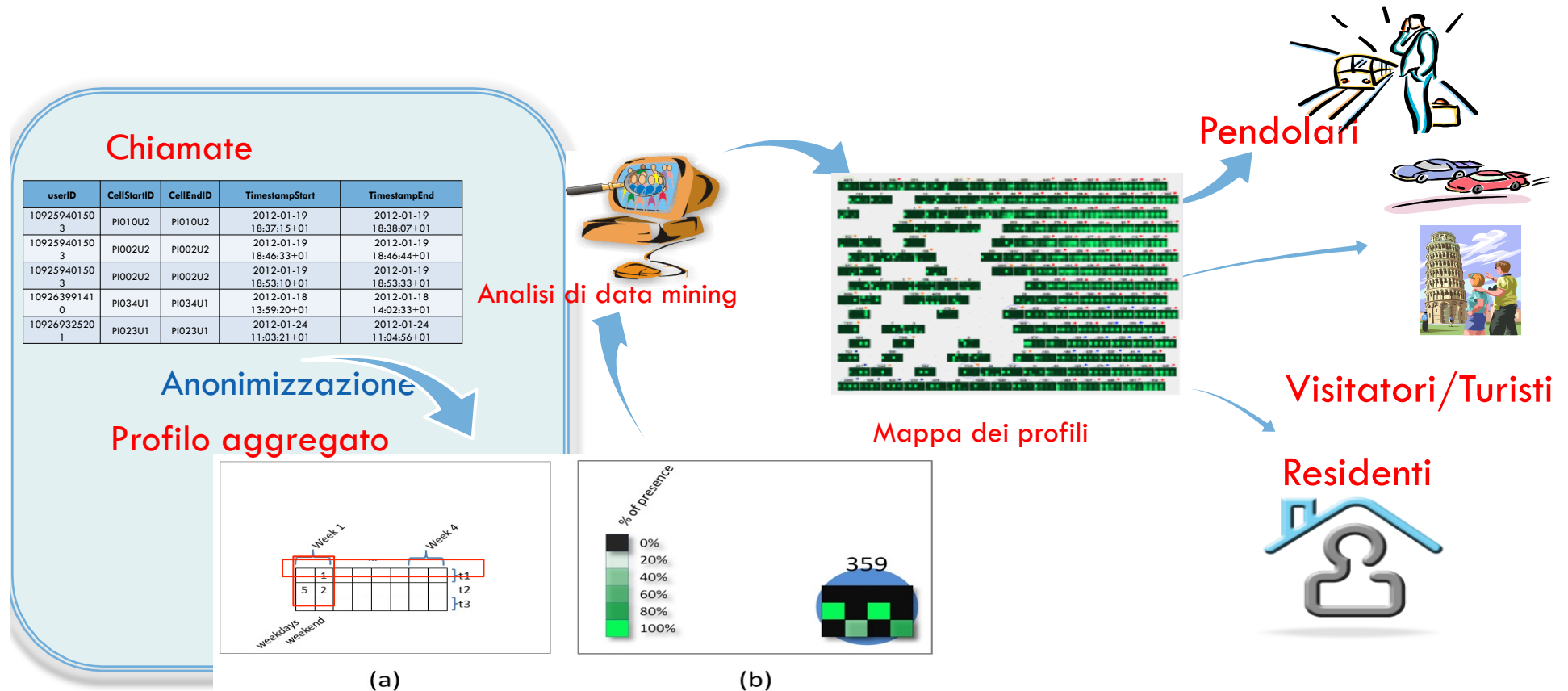
NEW DEAL ON DATA



Privacy-by-Design in Data Analytics



City User Sociometer with Privacy-by-design



A world map where the landmasses are filled with a dense pattern of small, dark blue icons. These icons include various symbols such as people, arrows, and data-related shapes, suggesting a global network or data flow. The map is set against a solid blue background.

A NEW DEAL ON PERSONAL DATA

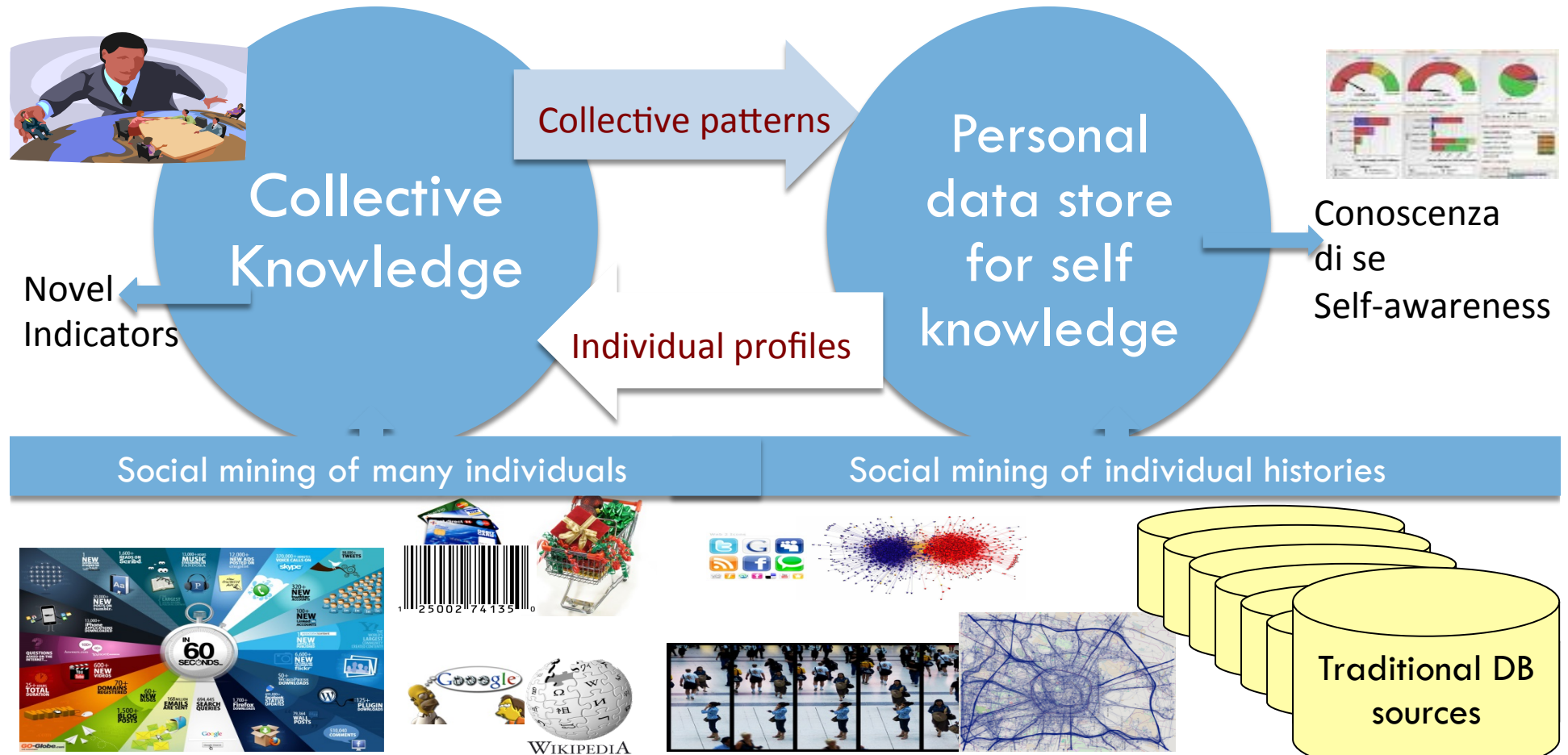
A horizontal bar at the bottom of the slide, divided into two sections: a solid green section on the left and a solid blue section on the right.

DEMOCRATIZING BIG DATA

A user-centric ecosystem for Big Data

- **Engage people** in the creation and use of big data and knowledge, by empowering individuals with **self-knowledge**
- Incentivize individual to **participate**, to align own self-interest with broader societal goals
- Based on **transparency, trust & privacy**

Conoscenza individuale e conoscenza collettiva



Special thanks to ...

- Fosca Giannotti, co-lead of KDD LAB
 - ▣ Fosca.giannotti@isti.cnr.it
- Salvo Rinzivillo, Mirco Nanni, Roberto Trasarti, Salvatore Ruggieri, Chiara Renso, Anna Monreale, Franco Turini
- all the fantastic folks at KDD LAB Pisa
- many international collaborators

Knowledge Discovery & Data Mining Laboratory | kdd.isti.cnr.it

