

Considerations on the recorded, quantified, communicated and apprised self

Overview | Your trips | Your Places | Tips | Fellow travellers | Your carbon


Tuesday August 18th
You are at home in **Gijón** today,
where the time is 6:16pm

You've planned a trip to **Donostia-San Sebastián**
between August 19th and August 21st
where the time is 6:16pm.

Your Personal Annual Report
Your report for the first half of 2009
is available for download.

Journal
Today, Tuesday August 18th
■ You added a trip to **Barcelona** in **September**.
less than a minute ago

Your next 3 planned trips [+ Add a trip](#)



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Map data ©2009 Tele Atlas - [Terms of Use](#)

- **Donostia-San Sebastián** from August 19th to 21st.
Arteleku
- **Geneva** from August 21st to September 3rd.
- **Barcelona** from September 3rd to 5th.

[View all your trips](#)

[Subscribe to your trips in iCal](#)

Fabien Girardin, Lift lab

Egoviz, San Sebastian, Spain, August 19, 2009

lift Lab.

Hello, my name is Fabien Girardin and I am a researcher at the newly founded Lift lab a research agency based in Geneva, Switzerland. We help companies and institutions understand, foresee and prepare for upcoming changes triggered by technological and social evolutions. In this talk present and discuss my work related to the increasing amount of stored (and circulating) information about people, and their local and global environments

Why now?

- **technical**: ubicomp, storage capabilities
- **social**: new practices with lifestreaming, lifelogging, social networks
- **political**: open data initiatives, policies aiming sustainable behaviors
- **economical**: new models with open APIs and softwares (databases, statistical and visualization frameworks)

Why are we discussing and building egoviz and personal informatics now and not before? I have noticed four main drivers and you might think of more.

Implications

Records of our interactions play an increasing role in the functions of everyday lives and the cities we live in. They enable to **quantify** our behaviors and **communicate** them with indicator and instrument to **appraise** ourselves and potentially take decisions or initiatives

These drivers implies that the records of our interactions with infrastructures play an increasing role. Moreover, there is now the possibility for individuals, organizations, cities to reveal previously invisible behaviors and take decisions or initiatives

Bureaucratic source

Fecha de salida 26/07/09 | 26/07/09

Hab.	Responsable	Resv/ Desg.	Hora salida	Observaciones contrato	Tot	AD	JR	NI	CU	TT00	Agencia
231		271-1		CASA BEBELC	2	2	0	0	0	0	LOPECANA
368		368-1		GRUPO FUENTES	2	2	0	0	0	0	CLUBMENO
132		462-1		GRUPO FUENTES	2	2	0	0	0	0	CORTENGL
327		991-1		GRUPO FUENTES	2	2	0	0	0	0	CORTENGL
33		992-1		GRUPO FUENTES	2	2	0	0	0	0	ON_LINE
35		993-1		GRUPO RODRIGO M	2	2	0	0	0	0	HBEDS
0		1190-1		OFERTA ESPECIAL J	2	2	0	0	0	0	HBEDS
5		1200-1		OFERTA ESPECIAL J	2	2	0	0	0	0	ENJO
		1282-1		OFERTA ESPECIAL J	2	2	0	0	0	0	HB
		1395-1		BUENA HABITACIÓN	2	2	0	0	0	0	0
		1450-1		PROLONGACION	2	2	0	0	0	0	0
		1536-1			4	3	0	1			
		1690-1			2	2	0	0			
		1098-1	5:55:00		2	2	0	0			
		23-1	6:50:00	OFERTA ESPECIAL C	2	2	0	0			
		1279-1	10:00:00		2	2	0	0			
		1475-1	11:45:00	HAB TRANQUILA	2	2	0	0			
		545-1	12:15:00	ALTO, TRANQUILO, N	4	4	0	0			
		1426-1	12:15:00	EB	2	2	0	0			
		1525-1	14:10:00	alto, buenas vistas (CO	2	2	0	0			
				Total día	50						

Hotel records in Menorca

There are many types of sources of records. Bureaucracy is probably the most traditional one.

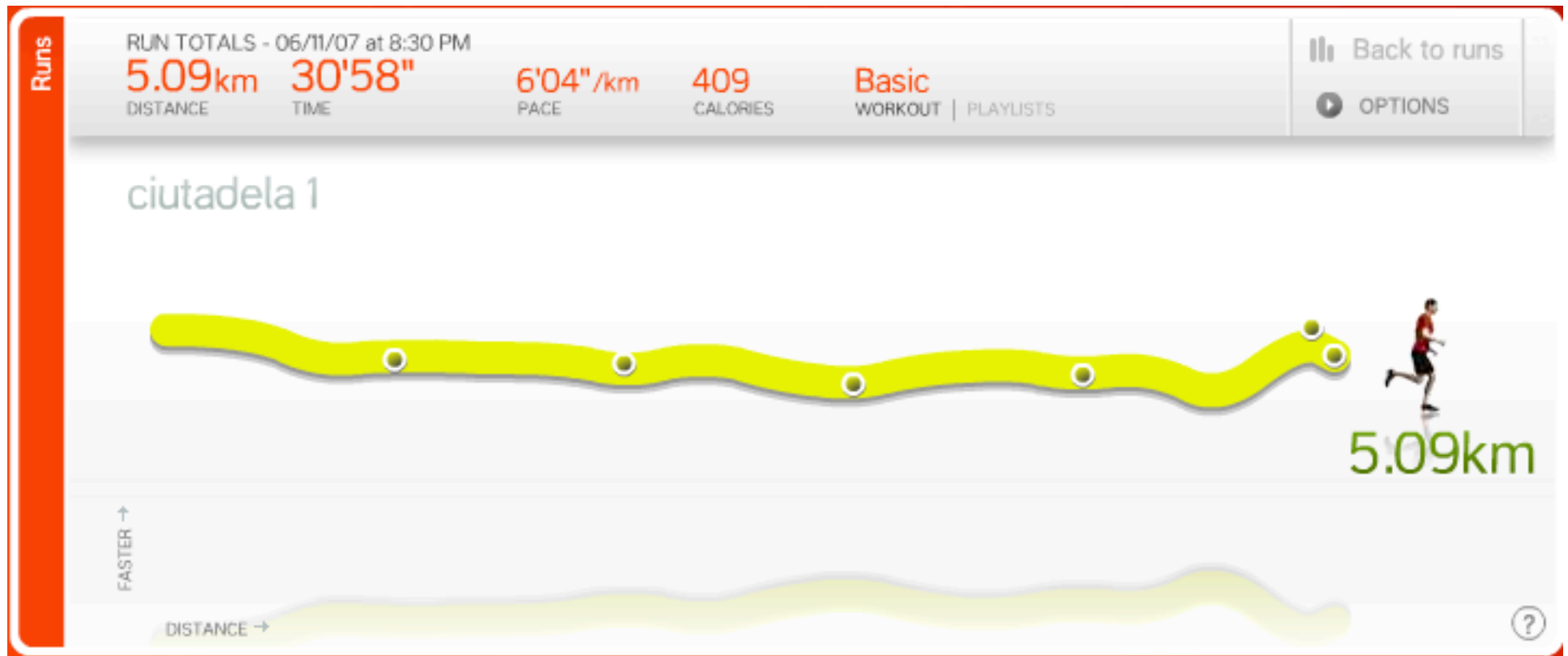
Attention data



Records from OnLife

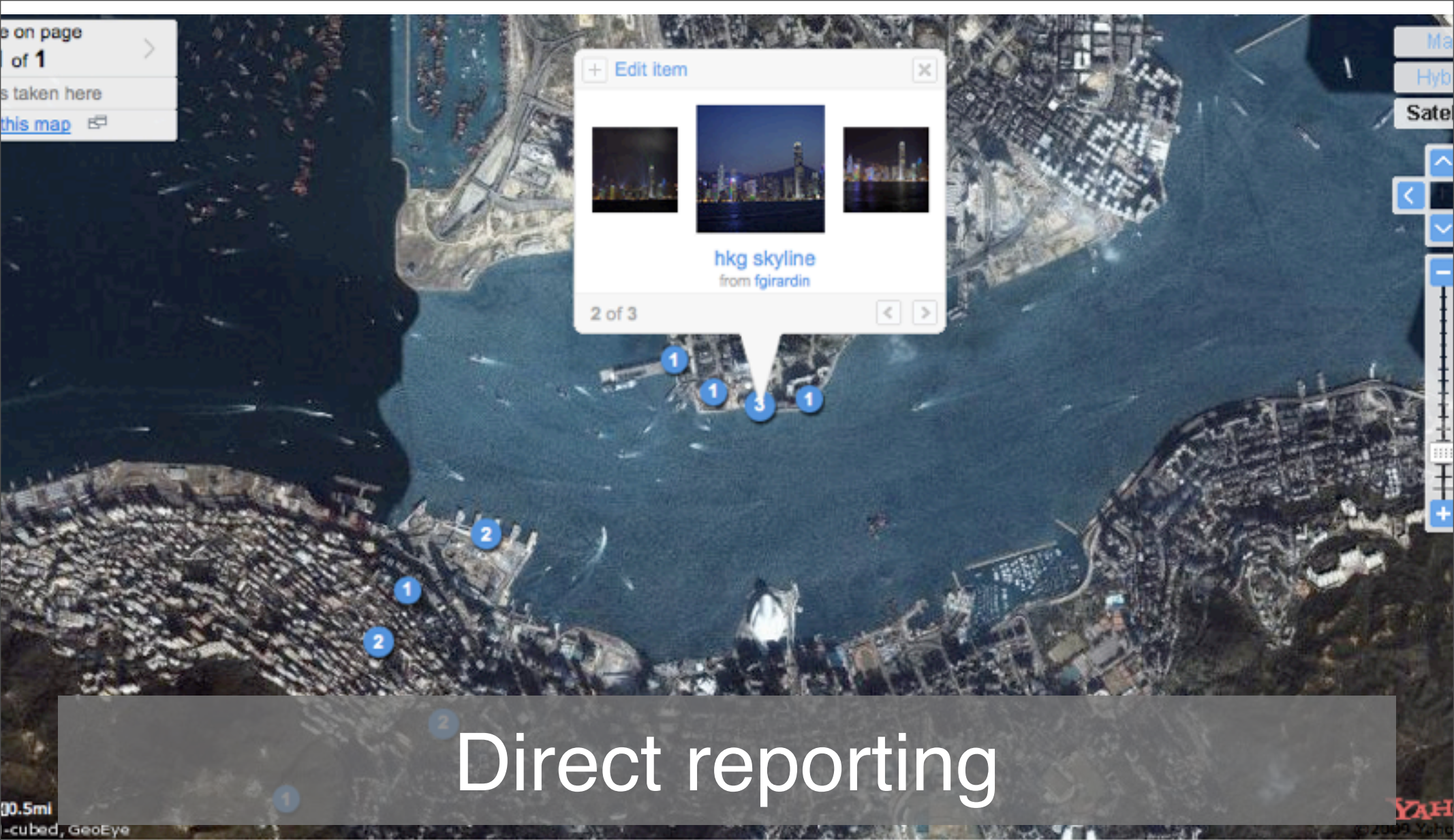
Nowadays, softwares record “attention data” that describes the time spent interacting with someone or something.

Personal sensors



Nike+ records

we wear/carry/keep sensors that record our personal activities



Direct reporting

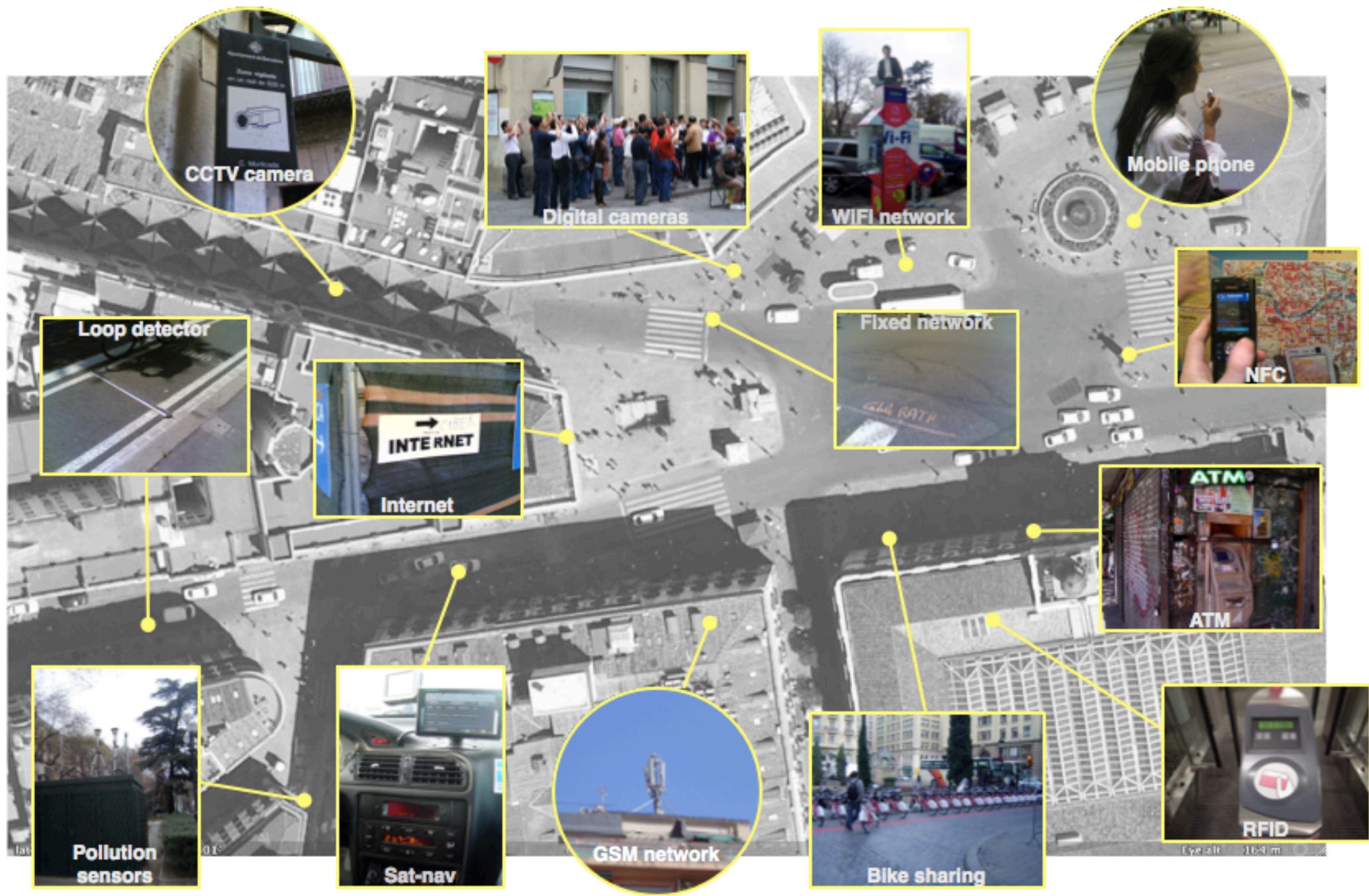
we also explicitly report data, information, photos to the network (in many cases to some kind of social network)

A photograph showing three environmental sensors mounted on a dark green utility box. The sensors are silver and black, with two having large, funnel-shaped intake ports. They are positioned on tripods. The background features a city street with trees, a brick building, and a street lamp with multiple white globe lights.

Sensors in environment

Fixed sensors now control and measure the quality of our environment (pollution, noise)

New urban actors



There is the emergence of less obvious sensors part of software infrastructures that are part of the contemporary city. We do not necessarily notice them but we implicit keep traces of our interactions with them.

Reported to the network

Mapa d'estacions **Informació del servei** **Zona d'usuaris** **Contacte** **Notícies**

Històric d'ús

accés usuaris

Activació targeta
Modificar dades
Sortir del compte Bicing

Zona d'usuaris

- > Guia d'usuari
- > FAQ's
- > Carril bici
- > Incidències
- > Enllaços d'interès
- > El temps
- > Sindicació de notícies
- > El meu compte bicing
 - > Activació targeta
 - > Modificar dades
 - > HISTÒRIC D'ÚS
 - > Pèrdua de targeta
 - > Baixa del servei
 - > Newsletter
 - > Totals
 - > Cancel·lar Renovació

Data Inici	Data Fi	Temps d'ús	Cost	Rebut
5/12/2008 10:09	5/12/2008 10:18	0h 9m	0.00 €	
5/12/2008 10:32	5/12/2008 10:37	0h 5m	0.00 €	
7/12/2008 04:19	7/12/2008 04:34	0h 15m	0.00 €	
10/12/2008 11:01	10/12/2008 11:21	0h 20m	0.00 €	
11/12/2008 10:33	11/12/2008 10:49	0h 16m	0.00 €	
14/12/2008 20:44	14/12/2008 20:51	0h 7m	0.00 €	
18/12/2008 11:18	18/12/2008 11:35	0h 17m	0.00 €	
19/12/2008 11:39	19/12/2008 12:01	0h 22m	0.00 €	
20/12/2008 02:53	20/12/2008 03:04	0h 11m	0.00 €	
21/12/2008 12:37	21/12/2008 12:43	0h 6m	0.00 €	
22/12/2008 19:16	22/12/2008 19:22	0h 6m	0.00 €	
22/12/2008 23:41	22/12/2008 23:47	0h 6m	0.00 €	
8/1/2009 14:46	8/1/2009 14:54	0h 8m	0.00 €	
10/1/2009 16:28	10/1/2009 16:33	0h 5m	0.00 €	
12/1/2009 19:06	12/1/2009 19:10	0h 4m	0.00 €	

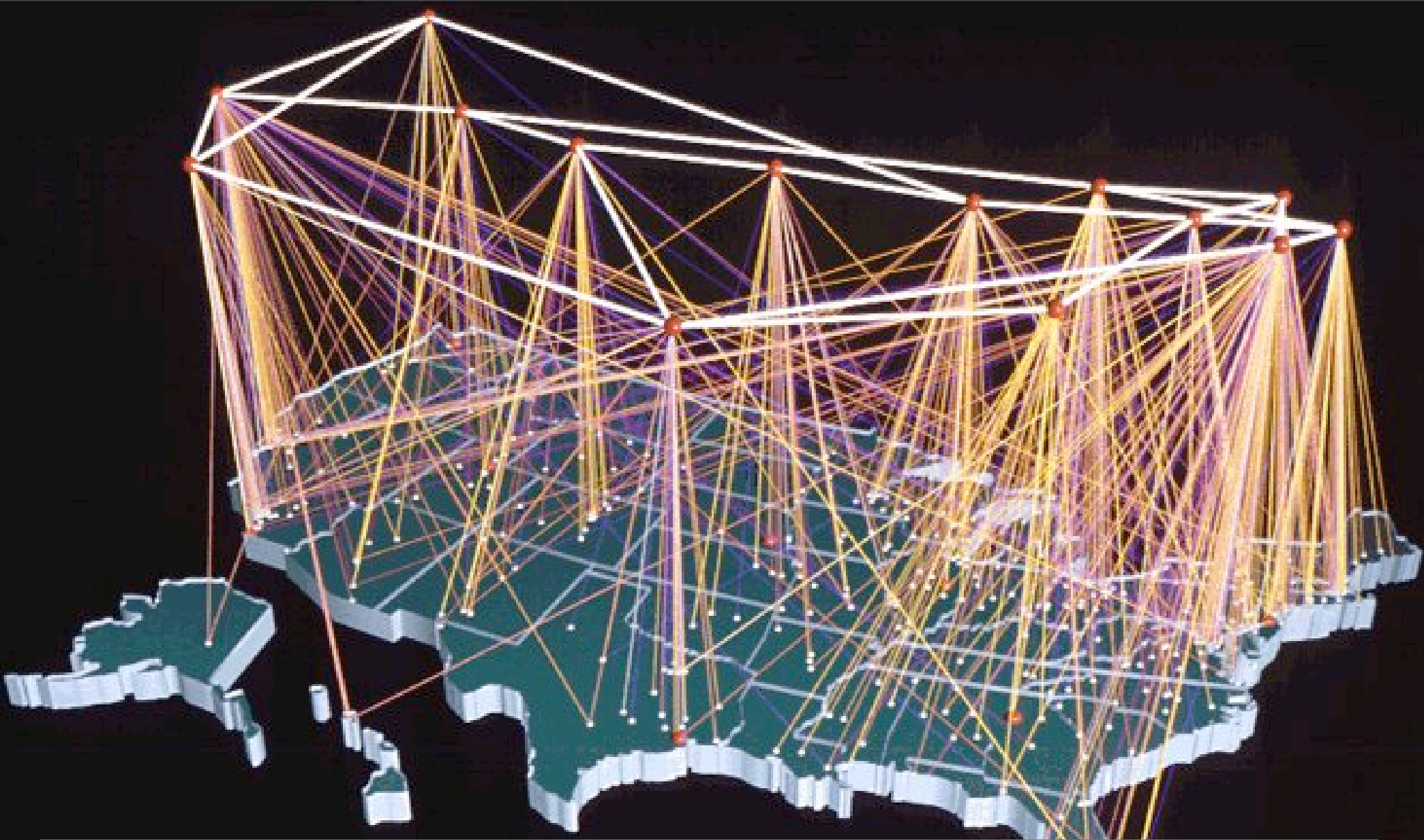
Our interactions are not only recorded but also reported to the network

Hybrid world

*Current technology requires information to be served from somewhere and delivered to somewhere. Heisenberg's uncertainty principle notwithstanding, at geographic scales **a bit always has an associated location in real geographic space.***
(Goodchild 1997)

Goodchild, M. F. (1997). Towards a geography of geographic information in a digital world. *Computers, environment and urban systems*, 25(6):377–391.

When reported to the network the data are associated to a geographic location, creating a hybrid world with an informational layer intertwined with the physical.



1991: geography of bytes

Visualization Study of the NSFNET, by Donna Cox and Robert Patterson from the NCSA in 1991

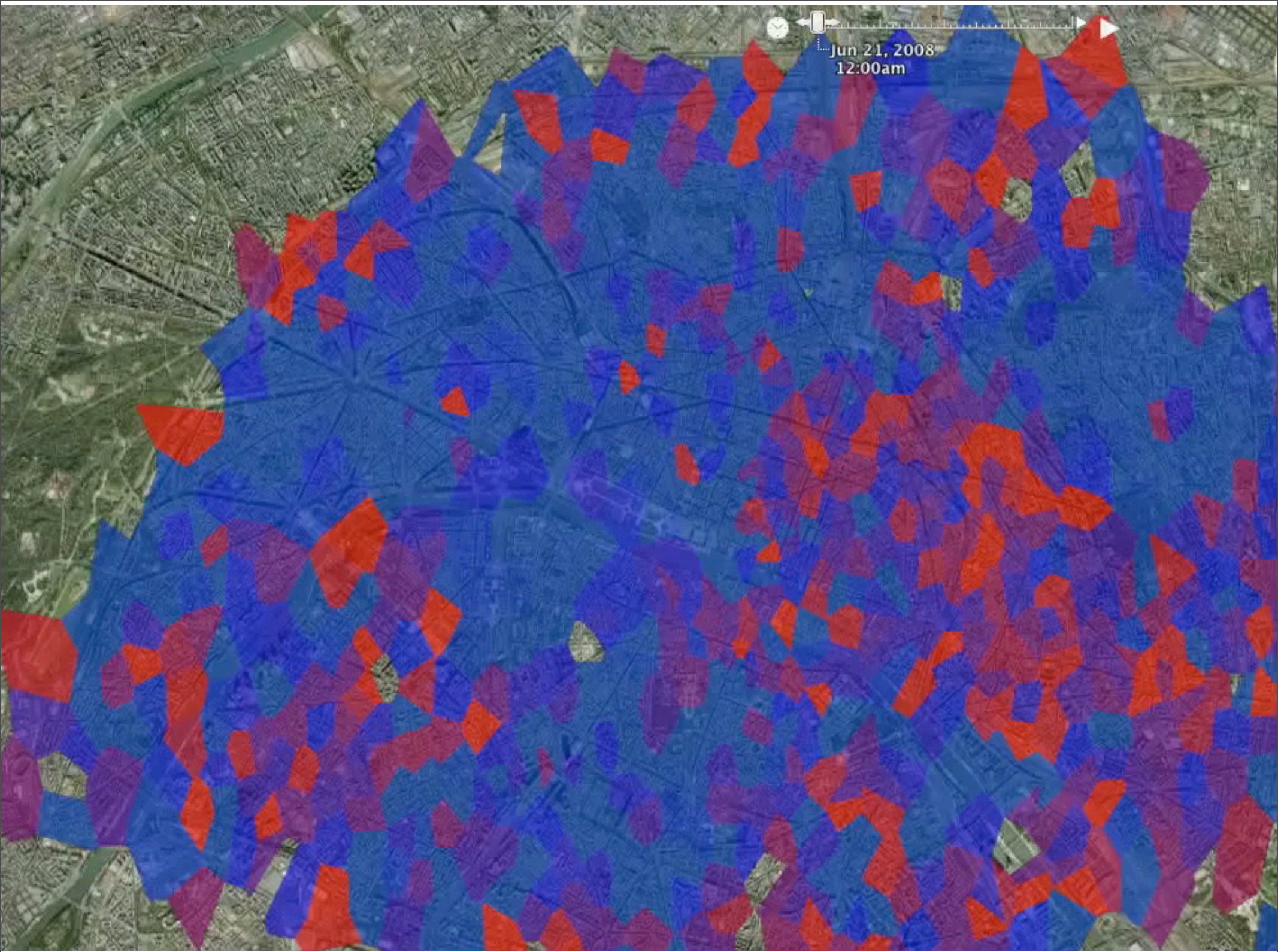
Maps revealed this hybrid world with its “geography of bytes” already 20 years ago, at the infancy of the Internet. Here the visualization of inbound traffic measured in billions of bytes on the NSFNET T1 backbone for September 1991. The traffic volume range is depicted from purple (zero bytes) to white (100 billion bytes). See the Martin Dodge’s Atlas of Cyberspaces for more on that <http://personalpages.manchester.ac.uk/staff/m.dodge/cybergeography/atlas/atlas.html>

The emergence of spatio-temporal data and their ubiquity allow to map a geography of bytes at a smaller scale. Here Velib records in Paris revealing one aspect of the city dynamics. <http://www.girardin.org/fabien/tracing/velib/>



Evidence?

This unique presence of a bike in a Vélib rack in Paris can have a meaning on the state of its environment (e.g. less attractive compared to others at that specific time of the day, it is a residential area with little activity?)



This type of evidence can now be mapped, such as here with the replay of the Velib bikes availability during the Fête de la Musique on June 21, 2008 (12:00am to 6am the next day) in Paris. Red areas show stations with a large amount of bikes AND more bikes available than a regular Saturday (comparison with June 14, 2008). <http://www.flickr.com/photos/drremulac/3661877295/>

Opportunities

What do we do with these records, the ability to quantify, and communicate them. There are many examples in the domains of health, logistic, environmental issues.

“The consequences for the social sciences will be enormous: they can finally have access to masses of data that are of the same order of magnitude as that of their older sisters, the natural sciences.” (Latour, 2007)

Latour, B. (2007). Beware, your imagination leaves digital traces, Times Higher Education Supplement, April 2007.

But the access to these massive amounts of spatio-temporal data have a consequence on social sciences (including urban studies)

*“When many individual diagrams are aggregated to the level of cities and regions, these visualizations may provide geographers, for the first time, with truly dynamic maps of dynamic human processes. **One might imagine them as twenty-first century “weather maps” of social processes.**”*

Zook, M., Dodge, M., Aoyama, Y., and Townsend, A. (2004). New digital geographies: Information, communication, and place. *Geography and Technology*, pages 155–176.

as well as geography

Instrumenting our lives

- Capture information about us and our environment
- See our behaviors and our environment beyond the halo, beyond the subjectivity
- Awareness tools give us some hooks around which to better understand the ourselves and the world, potentially use that information

The rise of the data scientist?



Fry, B. (2004). Computational Information Design. PhD thesis, Massachusetts Institute of Technology.

This implies the development of new cross-disciplinary techniques and skills as mapped by Ben Fry in his PhD thesis.

Examples

(tourism, urban studies, market research)

I will describe now with a couple of examples my experience as a data scientist

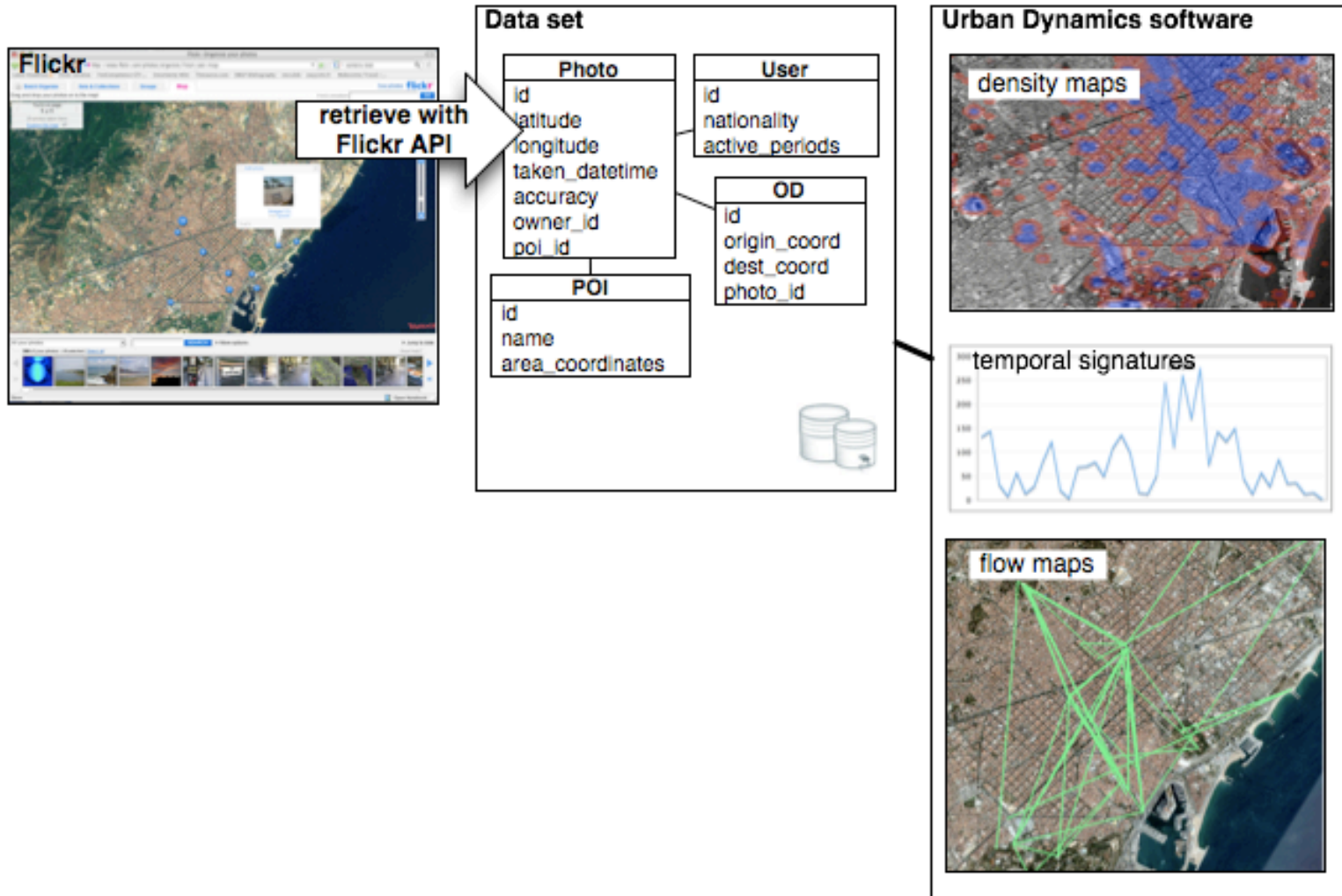
Photographers leave digital footprints



In this project, we were contacted by the Province of Florence that is desperate in acquiring information on the presence and flows of tourists who spend the day in the area without leaving any traditional trace of their stay (hotel survey, museum entrance). So we mapped the density and flows of photographers from the content they generate on the web (Flickr)

Method

← Data collection and storage → | Data fusion → | ← Data analysis and observations →



We developed a Urban dynamics software that performs novel data collection and analysis techniques augmented with visualization and mapping tools

Density and scales



Province of Florence (2005-2007)

81,017 georeferenced photos, 4280 photographers

The basic mapping of this data enables to uncover the density of tourists at very different scales, such as region, city and point of interest. While cities are interested in understanding tourist dynamics within their boundaries, we found out that they were equally interested in understanding how the “competitive” cities perform. This type of data allows comparisons.

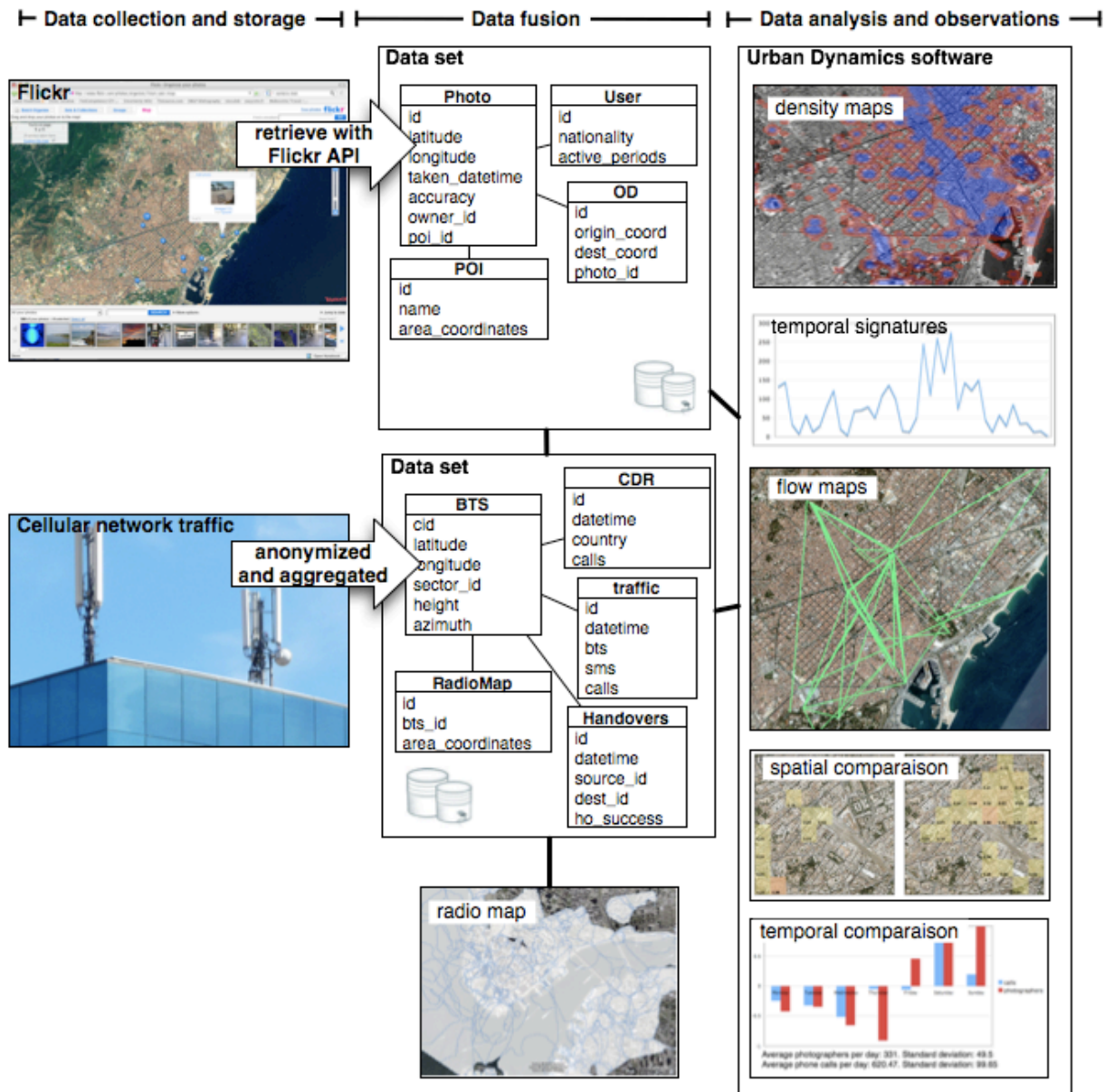
Unlike the automatic capture of traces, the manual location disclosure embedded in the act of geotagging of photo provides additional qualities. Positioning photo on a map is not simply adding information on its location, it can be considered as an act of communication containing what people estimate as being relevant for themselves and others. In that sense, a specific richness of this dataset arises in the intentional weight people put in disclosing their photos. We show that they have a tendency to select the highlights of their discovery of the city and discarding the downtimes.



Partners of photographers also
leave digital footprints

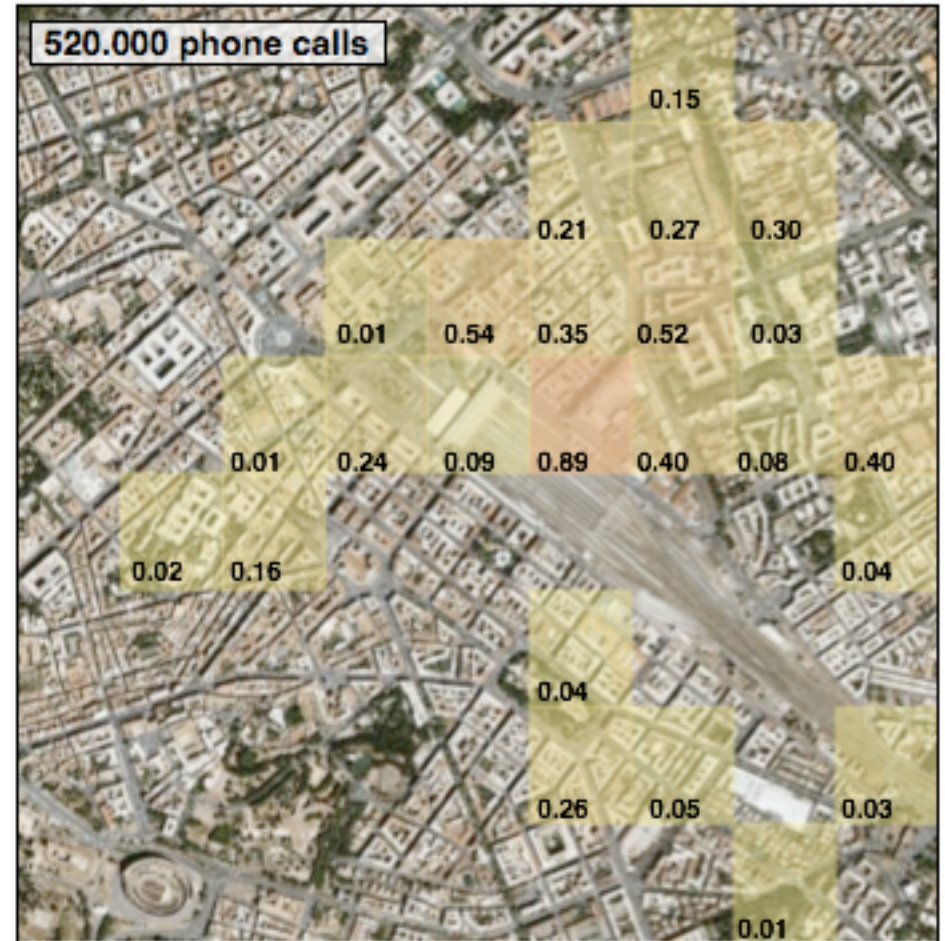
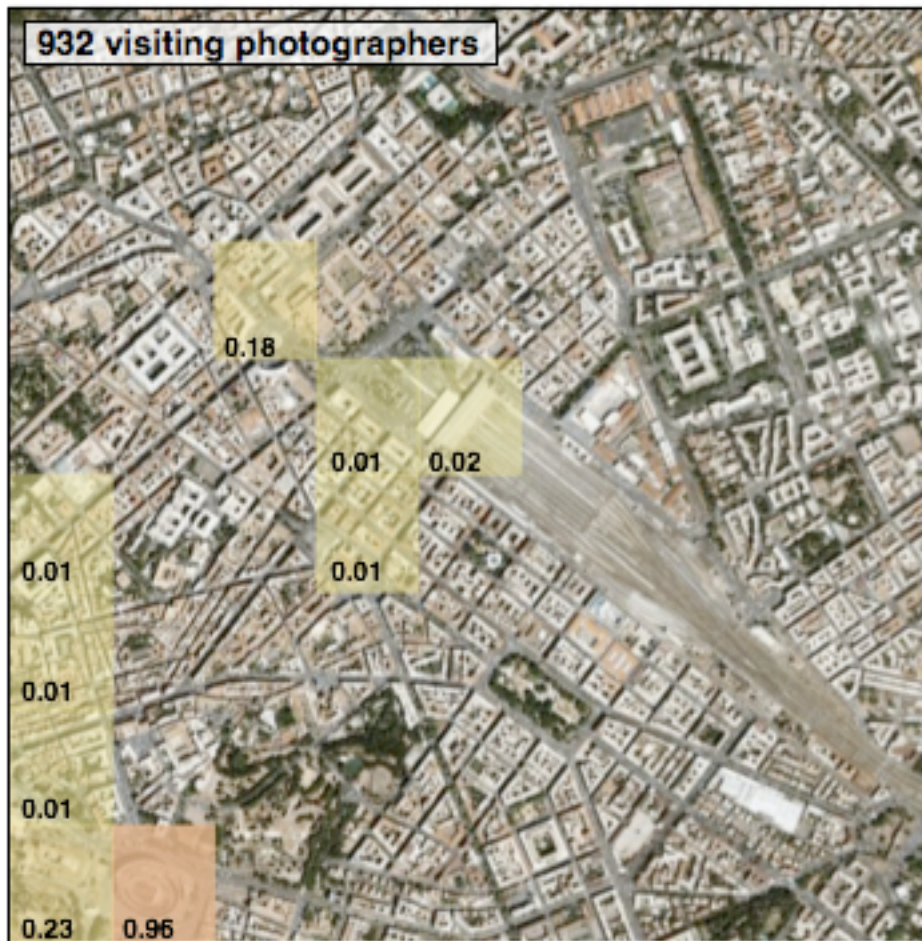
This work in Florence, led us to explore and compare other types of digital footprints

Method



We extended our urban dynamics software to perform the data fusion of multiple data sets, adding visualization and mapping elements to compare the datasets over time and space.

Space and visitors activities



Rome city center (Sept-Nov. 2006)

In Rome, we were able to compare the density of tourists from their digital footprints (i.e. georeference photos) and digital shadows (i.e. aggregated cellular network traffic) they generate when visiting Rome. The spatio-temporal analysis revealed that georeference photos were a good proxy to capture the presence of tourists in their sightseeing activities. On the other hand cellular network traffic data were good indicators of space where tourists are on the move or in their accommodations.

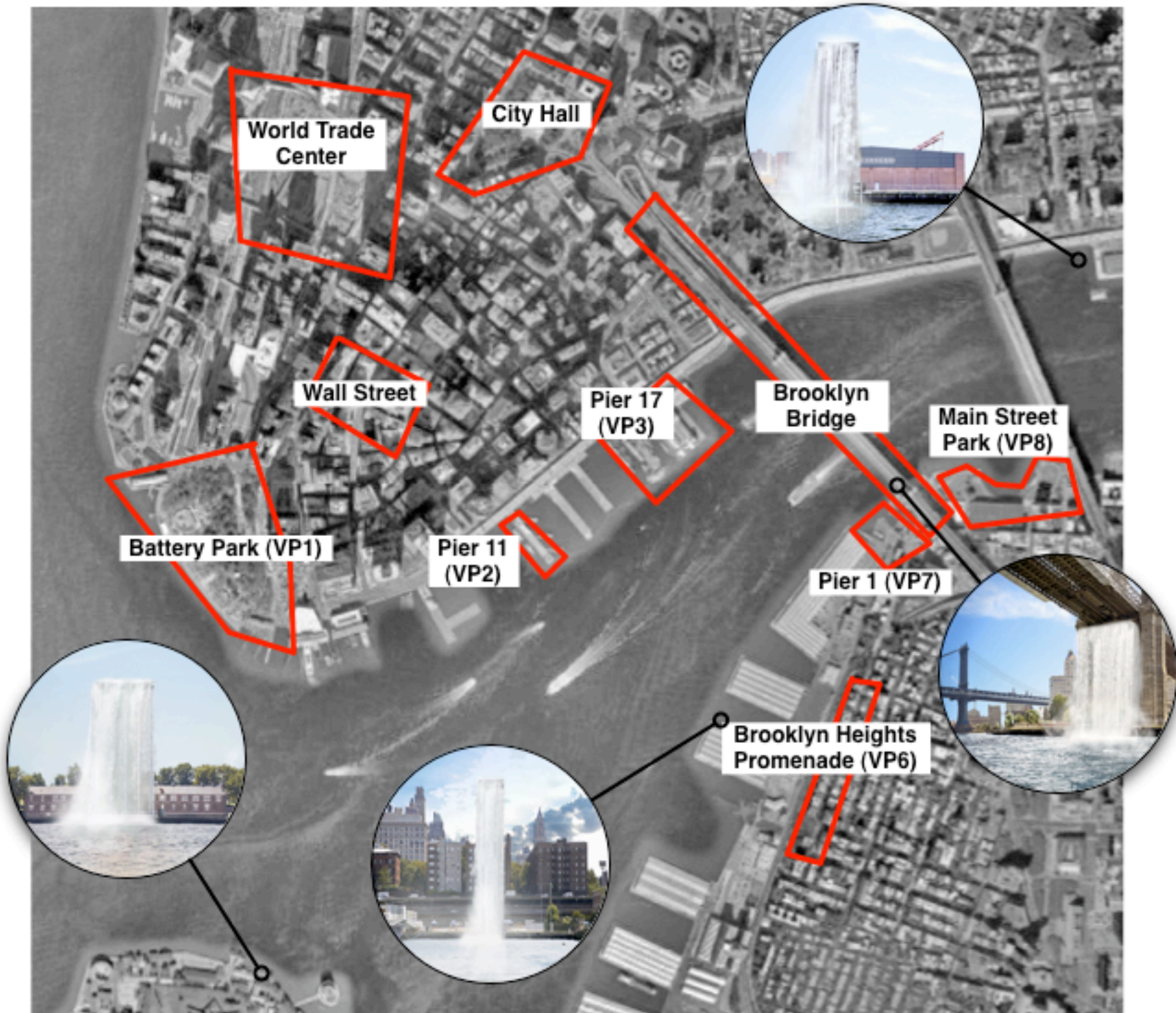


Attractiveness of the NYC Waterfront

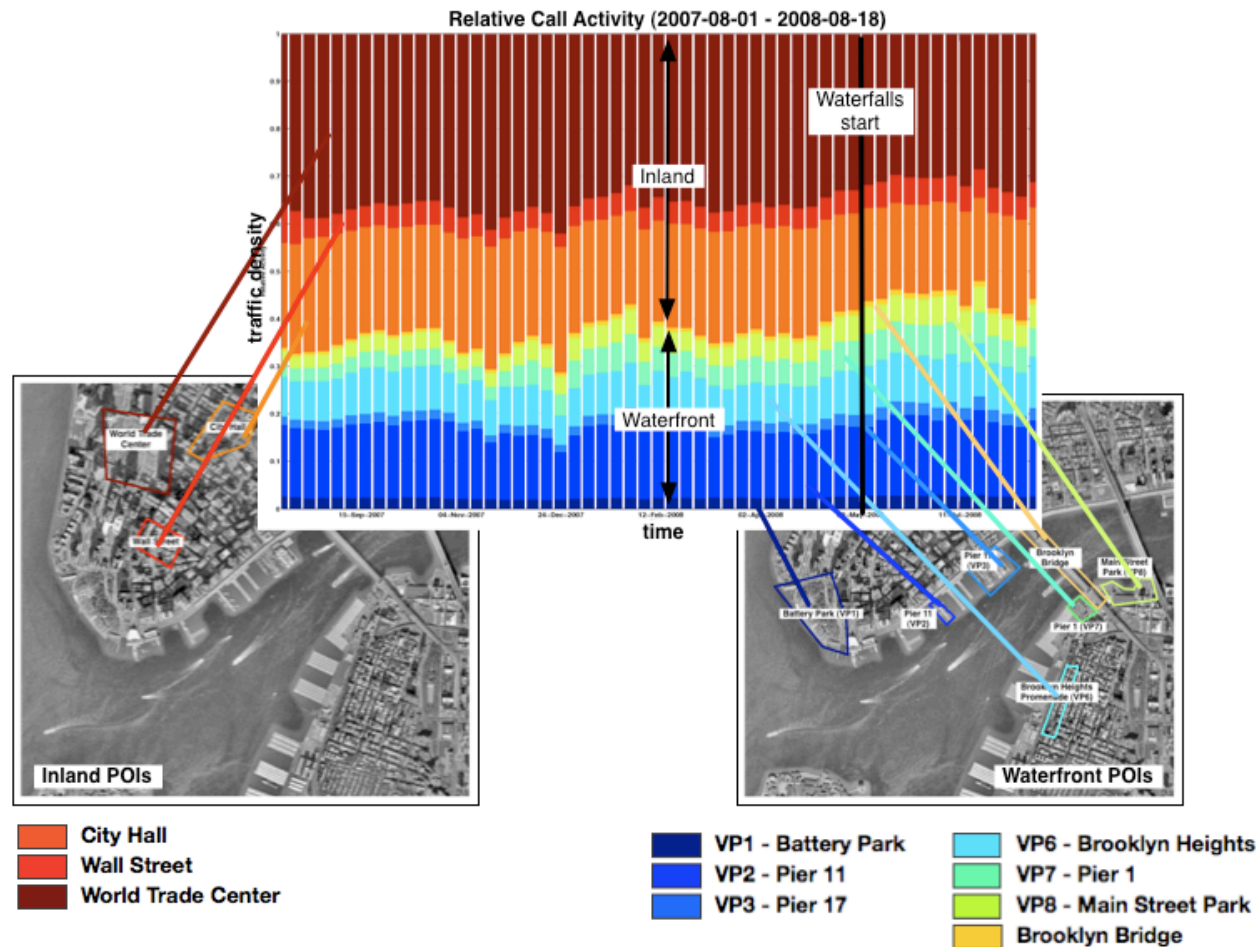
In summer 2008 around the New York City Waterfall public exhibit, we performed further studies on the characteristics of explicit (georeferenced photos) and implicit (aggregated cellular network traffic data) digital footprints to define indicators that measure the evolution of urban attractiveness.



Radio map




Comparative relative strength



The CRS indicator compares the (normalized) activity of one area of interest with respect to the overall activity of the city.

We developed several indicators to compare the evolution of the attractiveness of different areas around the waterfront and of areas of interest in proximity of the exhibit, based on their Comparative Relative Strength (CRS).

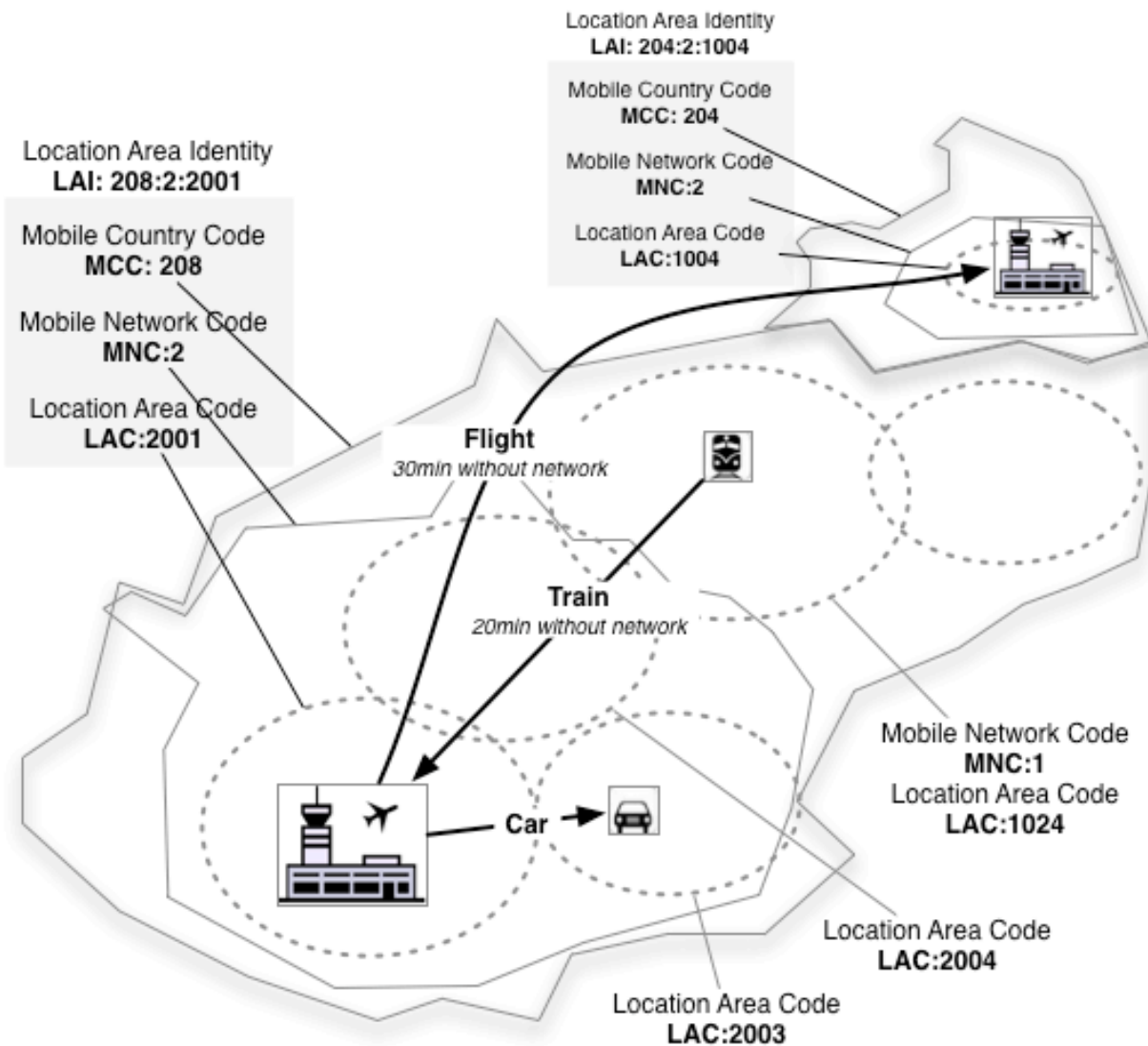


Any country
Any user
Anywhere
Accurately
Privacy
Cost
Longevity
No fatigue effect

Air-travel survey

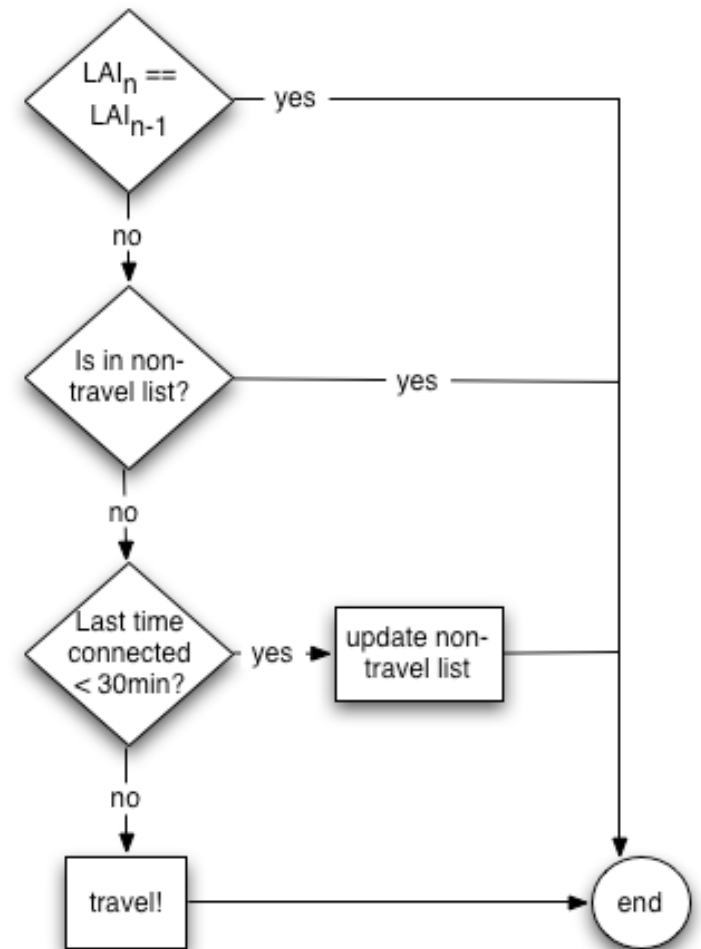
The advent of mobile and wireless technologies enables new methods of investigation of passengers behaviour that can eventually provide original insights into mobility studies. Because these technologies can capture travellers' experience in context and real time, they pave the road for new surveys methods.

Wireless fingerprinting



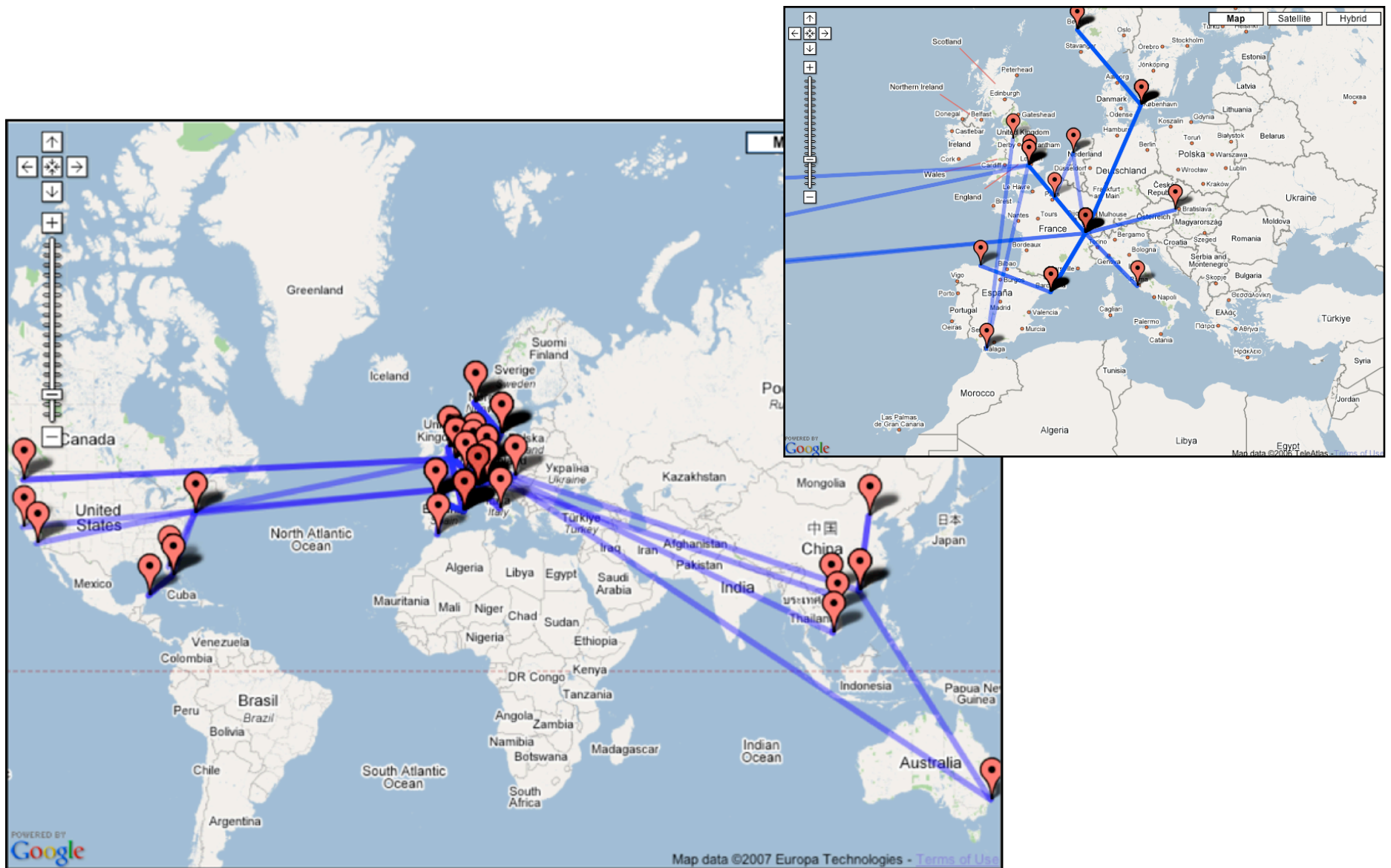
LAI sequences

Flight: 208:2:2001 → 204:2:1004
 Train: 208:1:1024 → 208:2:2004 → 208:2:200
 Car: 208:2:2001 → 208:2:2003



The originality of the method is that it does not rely on any GPS-like location information and runs on a large variety of mobile phones. It detects flights on a worldwide scale with wireless fingerprinting techniques. It asks travellers to report on their travel experiences as they occur, eliminating the recall bias of traditional solutions. Once the system detects a journey, it triggers a flight satisfaction questionnaire that sends answers to a centralized server.

World-wide evaluation



This approach respects the traveller's privacy and proved a 97% success rate in detecting flights in a 12-months study involving 6 travellers who boarded on 76 planes.

Considerations

Not solving issues -> engage

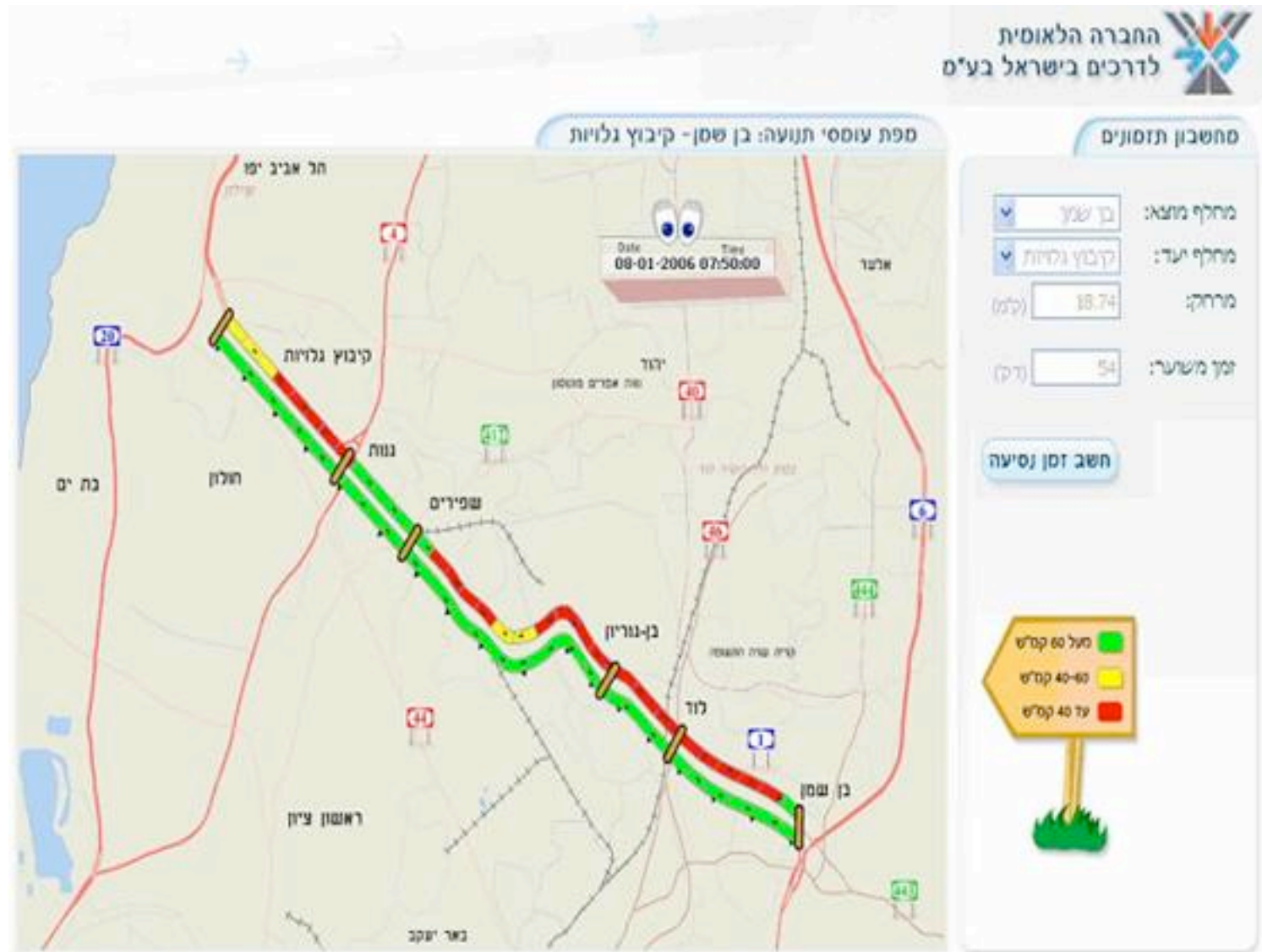
Feedback loop -> imperfect mirror to reality

Clumsy automation -> value of the act of communication

Panopticon -> oligopticon

Based on my experience, there are a few consideration I would like to highlight

Reveal problems but do not solve them



Revealing dynamics aim at revealing issues but not necessarily solve them. It actually might open more rather than answering questions (more theories)

Reveal to engage



Visualizations are part of process – not as instruments to take decisions but to engage and open the discussion



Feedback loop

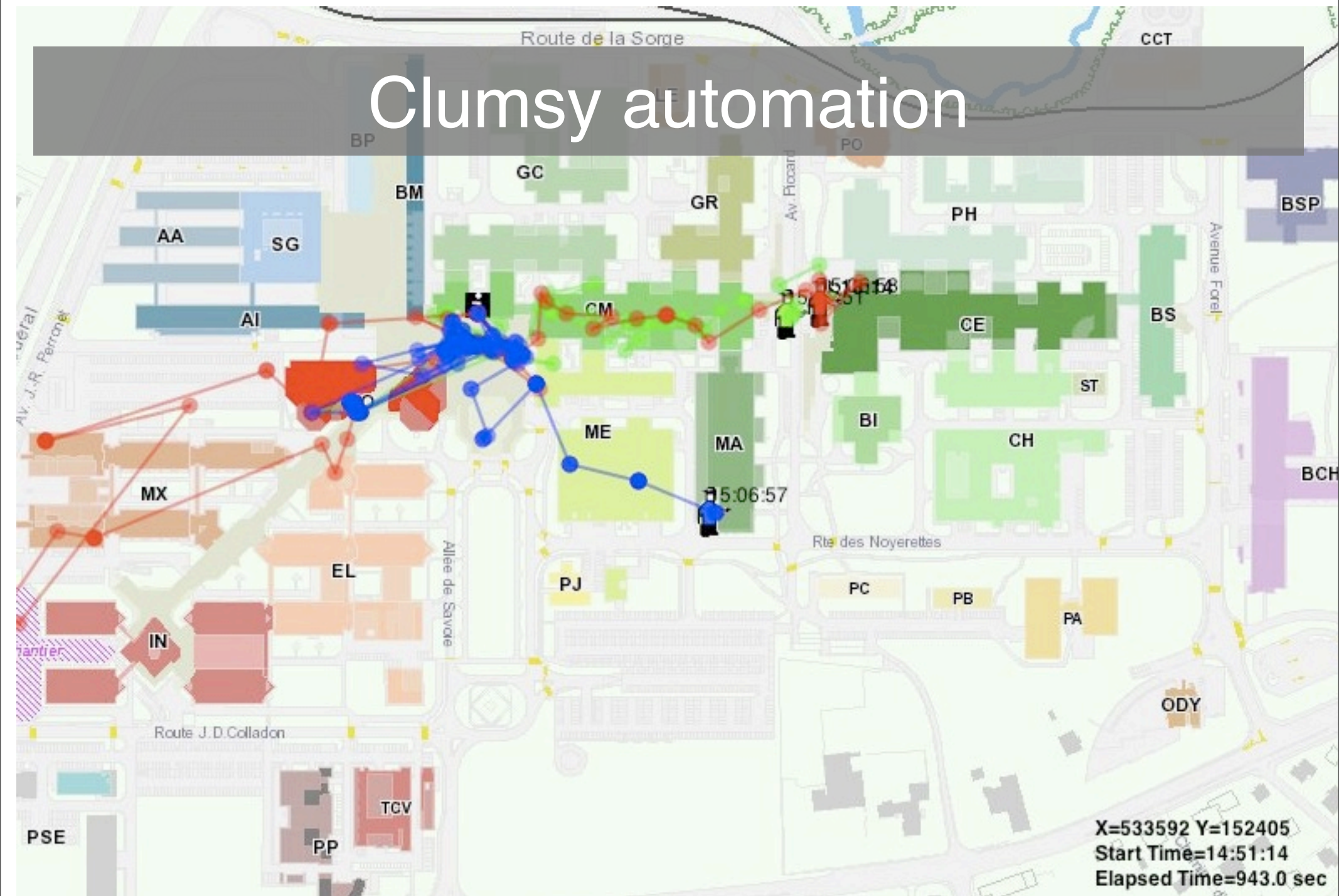
Systems that absorb information and reveal back the back the activity/behaviors (here WikiCity Rome project), part of the research in persuasive computing

Imperfect mirror to reality



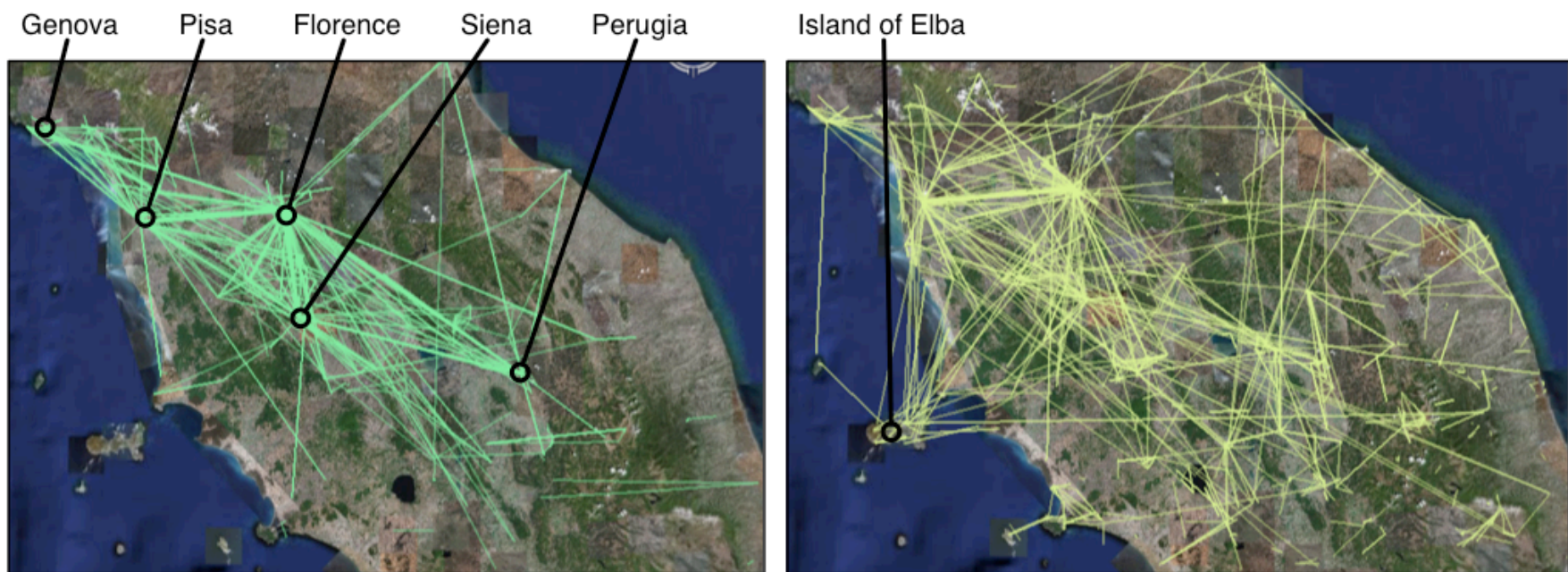
However many times we sense what is cheap to sense + can we really dissolve a personality/city into data? Nevertheless we have a capacity to adapt to imperfection (seamful design)

Clumsy automation



The massive amount of digital footprints is a manifestation of the increasing simplification and automation interactions with computers. When the automated process fails to deliver the expected quality of geoinformation people need to rely on other sources of information and social interactions.

Value of the act of communication



Subjectivity, ability to lie and erase

The fact that no American reports a trip to the Island of Elba does not mean they avoid this part of the country, but rather that they do not find relevant to report about it.

Panopticon



The Panopticon is a type of prison building designed by English philosopher and social theorist Jeremy Bentham in 1785. The concept of the design is to allow an observer to observe (–opticon) all (pan–) prisoners without the prisoners being able to tell whether they are being watched, thereby conveying what one architect has called the "sentiment of an invisible omniscience.". The imperfect mirrors to reality challenges the rethoric of the perfect surveillance system.

Oligopticon


A man with curly hair, wearing a dark t-shirt, stands on a rooftop garden. He is holding a tall, thin, yellow and black telescopic pole that extends high into the sky. At the top of the pole is a camera. The background shows a city skyline with various buildings, including one under construction with a red crane. The sky is overcast with grey clouds. A grey semi-transparent banner is overlaid on the top part of the image, containing the word 'Oligopticon' in white text.

Image courtesy of Julian Bleecker

Rather than panopticons we are building oligopticons that are blind but plugged in, partially intelligent, temporarily competent and locally complete. This is exemplified by Julian Bleecker's recent work on Capturing Other Points of View: <http://www.nearfuturelaboratory.com/2009/08/10/an-apparatus-for-capturing-other-points-of-view/>

Wrapping up

- Instruments that engage the the shift from “predict and accommodate” to “observe and improve” our lives
- There is a big assumption in seeing the world as consisting of bits of data that can be processed into information that then will naturally yield some value to people. Dissolve personality or city into data?

A photograph of a restaurant interior. In the foreground, a white paper bag is held up, displaying the text "We need People to work" in a black, serif font. In the background, a dark sign with white text reads "U kunt meteen Beginnen met Pinnen". The sign also features logos for "AMERICAN EXPRESS" and "Diners Club International". The restaurant has a stone wall, a bar counter, and a television screen showing a soccer game.

*We need
People
to work*

Lawyers, architects, urban designers,
psychologists, economists, social scientists,
entrepreneurs, lobbyists, artists

In the future the capacity to record, quantify, communicate and apprise the self (individual, organization or city) will necessitate multidisciplinary practises with overlapping roles to overlap and blur into each other.

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Thank you

lift Lab.

Thanks to Kepa and the other workshop organizers for the invitation!