

# the connective power of design

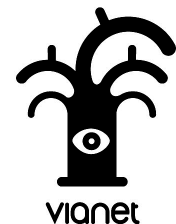
luca simeone

Arts&Innovation Discourses

**ual:** university  
of the arts  
london  
central  
saint martins

# Short bio

- Design research: Harvard, Malmö University, Innovation Insights Hub - Central Saint Martins, MIT
- Design practice
- In the past 20 years, as founder and/or member of the managing board, I was instrumental in launching 6 start-ups (creative industries), with annual turnovers ranging from € 0 to € 30.000.000



# DEN

DESIGN ENTREPRENEURSHIP  
INSTITUTE

Design Entrepreneurship Institute (DEN) is a no-profit Belgian think tank aimed at studying and offering consultancy services on how design **can ignite, foster and fuel entrepreneurship.**

# How can design support entrepreneurship?

(Mostly interested in academic entrepreneurship)

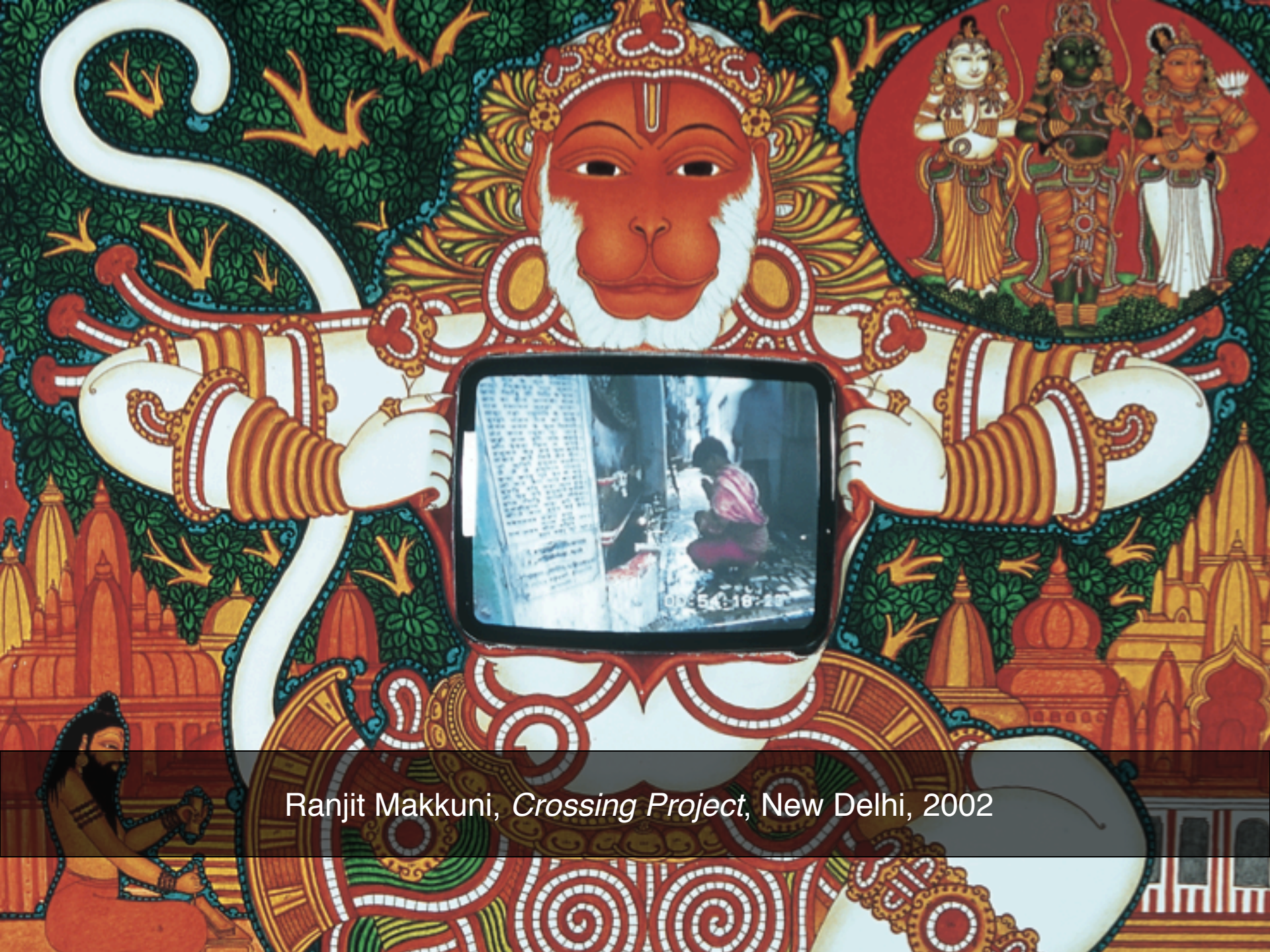
## **The Community of Practice initiative**

This event is held as part of UAL's Community of Practice initiative, for which the Hub has committed to focus its discourse on evaluation methodologies. Within the discussion, this event provides an opportunity for academics, students, university management staff and invited industry guests to share experiences of evaluation methodologies used in collaborative projects.

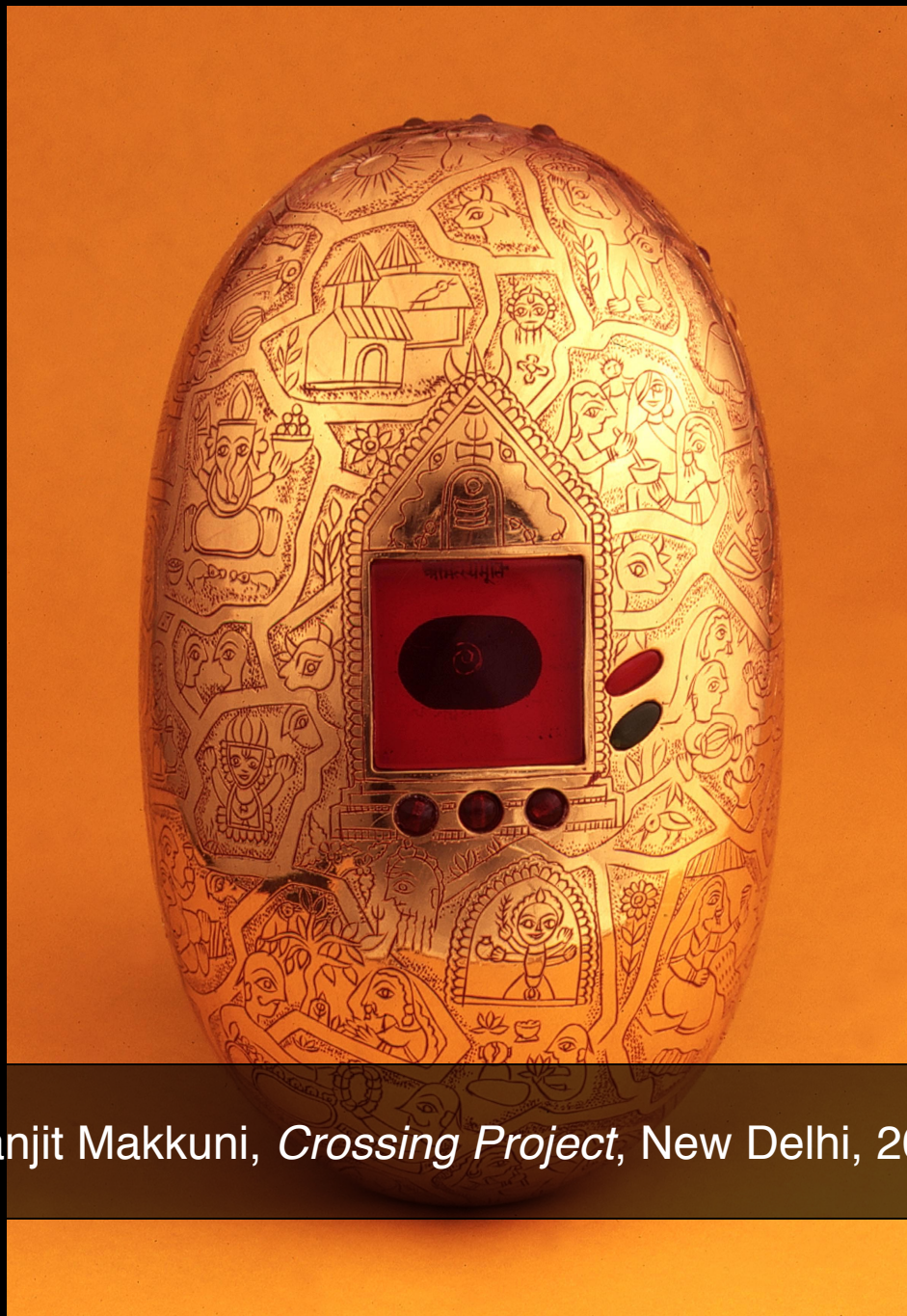
SACRED W  RLD

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sacred world foundation



Ranjit Makkuni, *Crossing Project*, New Delhi, 2002



Ranjit Makkuni, *Crossing Project*, New Delhi, 2002





Ranjit Makkuni, *Crossing Project*, New Delhi, 2002



# Ranjit Makkuni

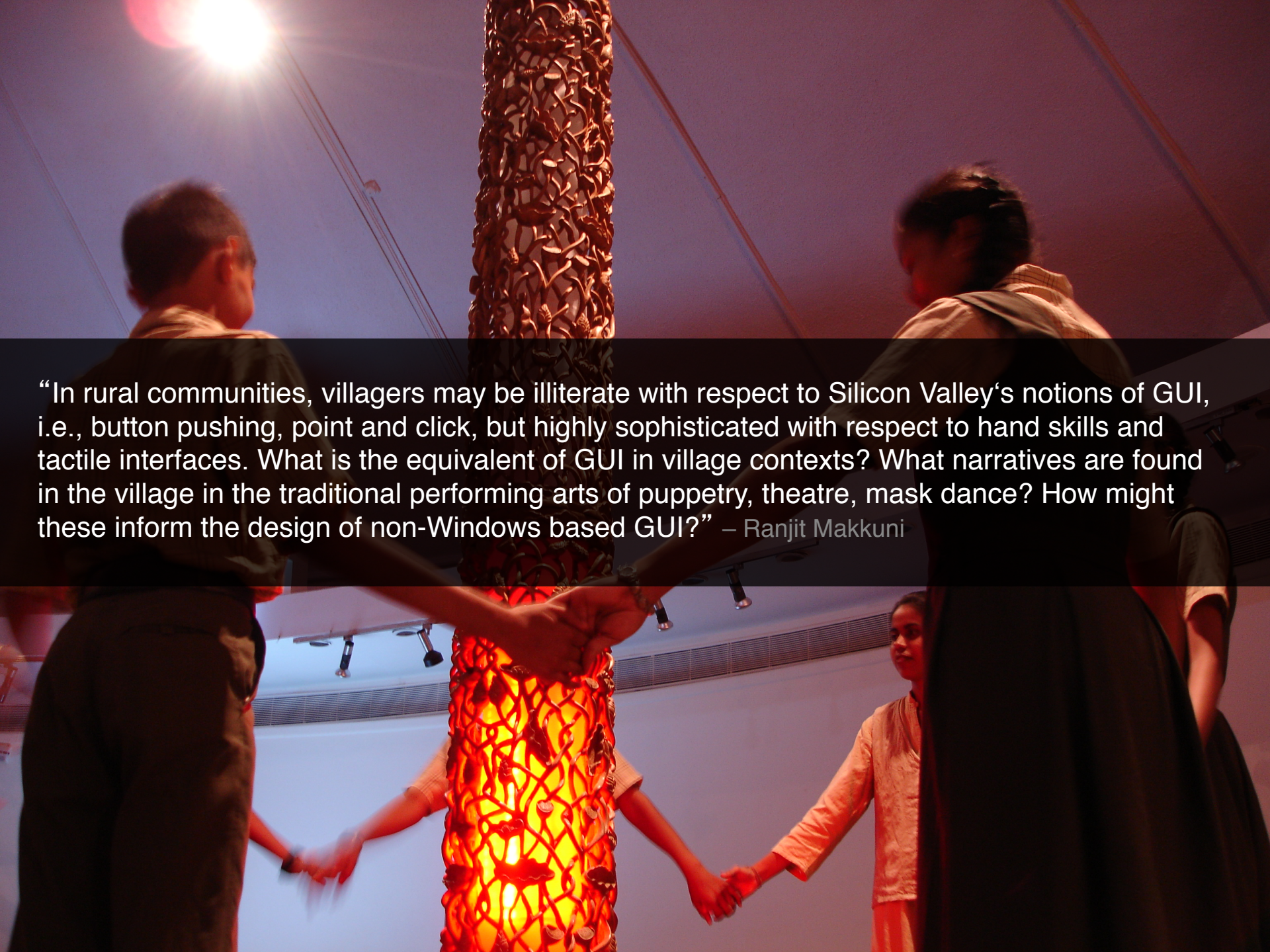
1985 / Xerox Palo Alto Research Center (PARC)

- Smalltalk-80 Object Oriented programming language
- First graphic user interface
- Gesture-based interfaces
- Multimedia applications for education

1998 / Founded the Sacred World Foundation in New Delhi



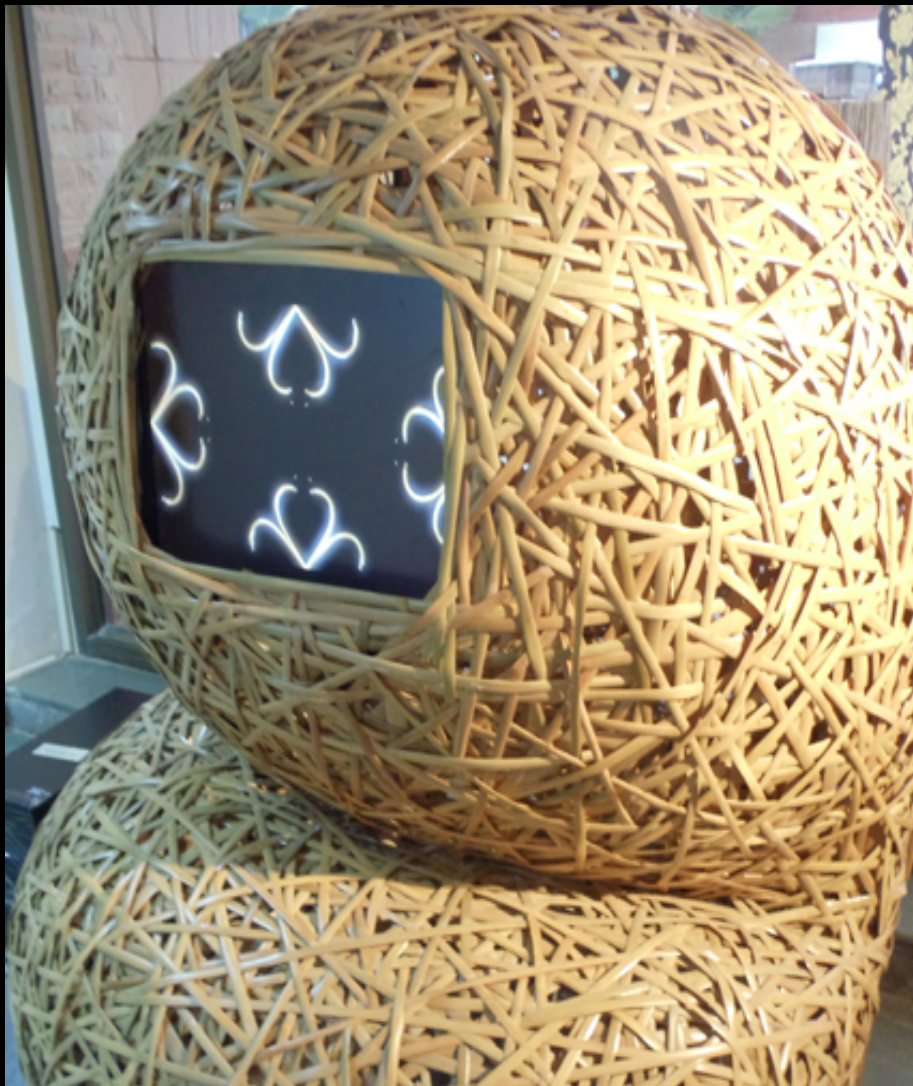
“I decided to leave the US and move back to India because I wanted to explore the possibility of going beyond the design and technological notions elaborated in Silicon Valley” – Ranjit Makkuni



“In rural communities, villagers may be illiterate with respect to Silicon Valley’s notions of GUI, i.e., button pushing, point and click, but highly sophisticated with respect to hand skills and tactile interfaces. What is the equivalent of GUI in village contexts? What narratives are found in the village in the traditional performing arts of puppetry, theatre, mask dance? How might these inform the design of non-Windows based GUI?” – Ranjit Makkuni



Planet Health is one of the Sacred World Foundation's latest project, a multimedia museum that contains a set of interactive artworks exploring the concept and experience of health from multiple perspectives. Most of the installations are related to **Ayurveda** and **Yoga** which are seen as strictly interrelated and connected to a wider spiritual approach.



Computer installation modeled as a blood cell and executed in bamboo

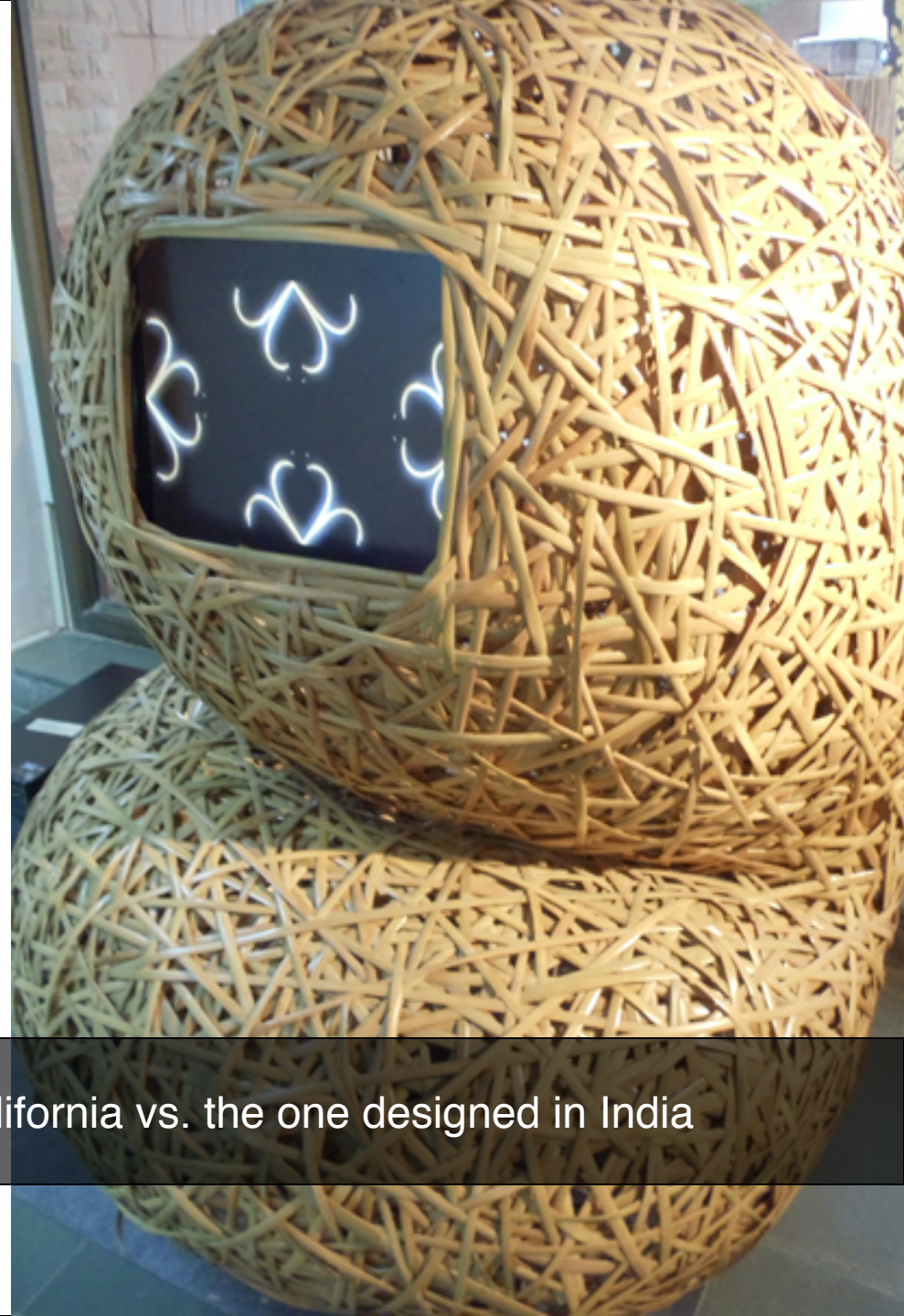


Interactive Tree: sculptures trigger off sounds of Nature when touched



Set of interactive installations





User experience designed in California vs. the one designed in India

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design as a connector



## **Industry**

Sensor technologies  
HW and SW

## **Research**

Non-textual interaction  
Responsive environments

## **Skills of Indian artisans**

## **Indian and South-Asian cultural forms**

Mythical and religious elements  
Imagery

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Stakeholders with different agendas, needs, interests, languages

**Government bodies**

**Funding agencies**

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**Cultural institutions**

**Research**

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Responsive environments

**Skills of Indian artisans**

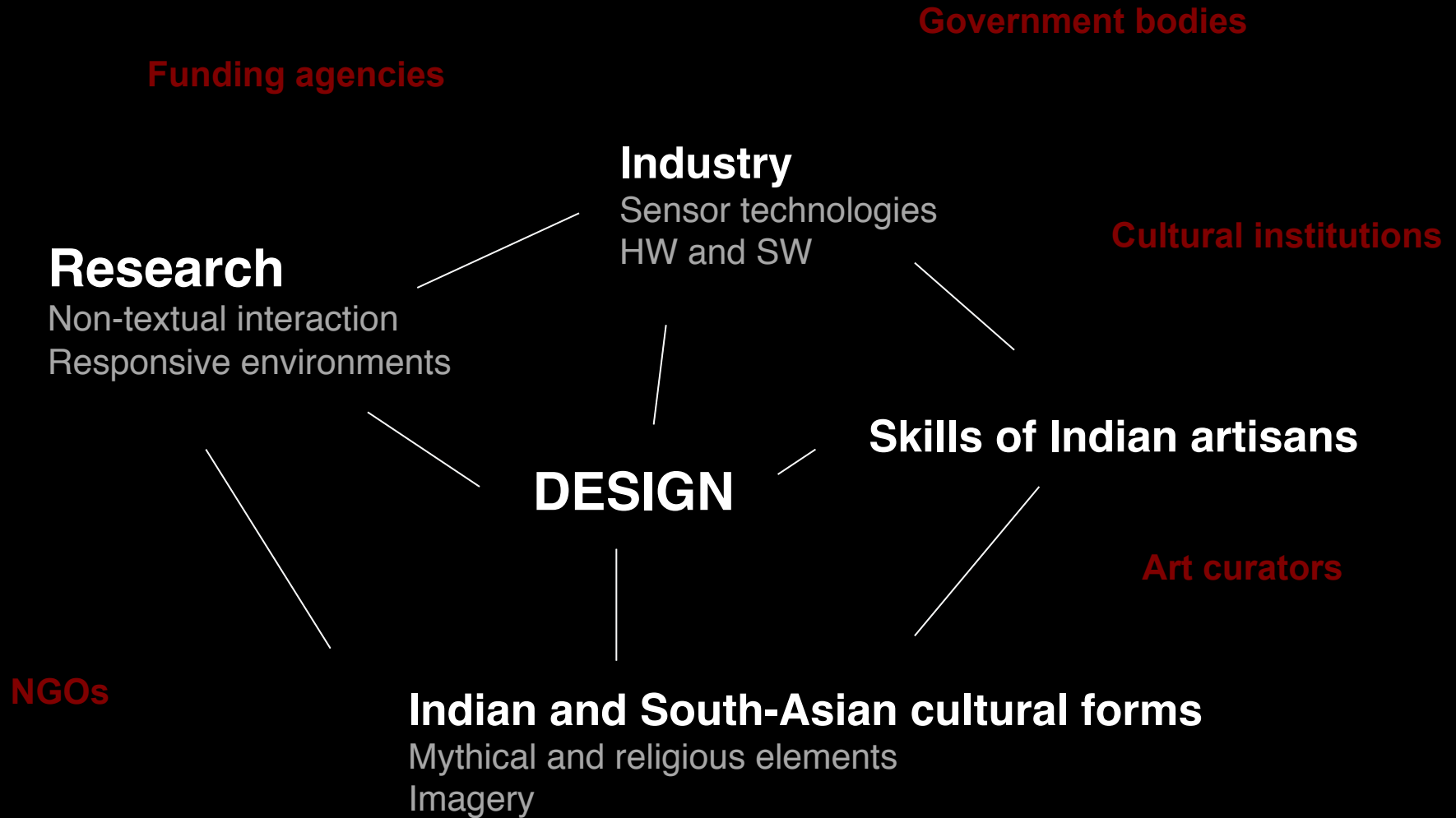
**Art curators**

**NGOs**

**Indian and South-Asian cultural forms**

Mythical and religious elements  
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**DESIGN**

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Mythical and religious elements  
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Connective power of design



Funding agencies

## Research

Non-textual interaction  
Responsive environments

Indu  
Sens  
HW a

Way of thinking

+

Set of methods

ons

# DESIGN

Skills of Indian artisans

Art curators

NGOs

## Indian and South-Asian cultural forms

Mythical and religious elements  
Imagery

## Way of thinking + Methods

- Rapid and frequent prototyping
- Reflective practice, knowing through making
- Use of visualization techniques
- Attention to the final users
- Participatory design (hackathons, design jams, ...)

# DESIGN

## Research

Non-textual interaction  
Responsive environments

Funding agencies

Indu  
Sens  
HW a

Skills of Indian artisans

Art curators

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## Indian and South-Asian cultural forms

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# Design at the Sacred World Foundation

- **Participatory design:** collaborative design sessions, where local artisans work together with researchers and hi-tech industry
- **Iterative development processes:** various prototypes produced and tested with multiple stakeholders (museums, NGOs, industry, artisans...)
- **User research and testing:** final users are involved at a very early stage and then throughout the project
  - What do users need and desire from the artifacts designed by the Sacred World Foundation?

**Government bodies**

**Funding agencies**

**Industry**

Sensor technologies  
HW and SW

**Cultural institutions**

**Research**

Non-textual interaction  
Responsive environments

**Skills of Indian artisans**

**DESIGN**

**Art curators**

**NGOs**

**Indian and South-Asian cultural forms**

Mythical and religious elements  
Imagery

Design activities such as user research and testing, iterative prototyping, participatory design are all ways to connect and align different stakeholders

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# design and entrepreneurship

how can the connective power of design support entrepreneurship?

# A wide notion of entrepreneurship

- In the current networked economies, innovative **ideas**, **competences** and **resources** are sometimes **distributed** in different geographic, social, cultural contexts or possessed by diverse people and organizations
- **Entrepreneurs bring together** these **ideas**, **competences** and **resources** forging connections and establishing organizations, which can create economic, societal, environmental value



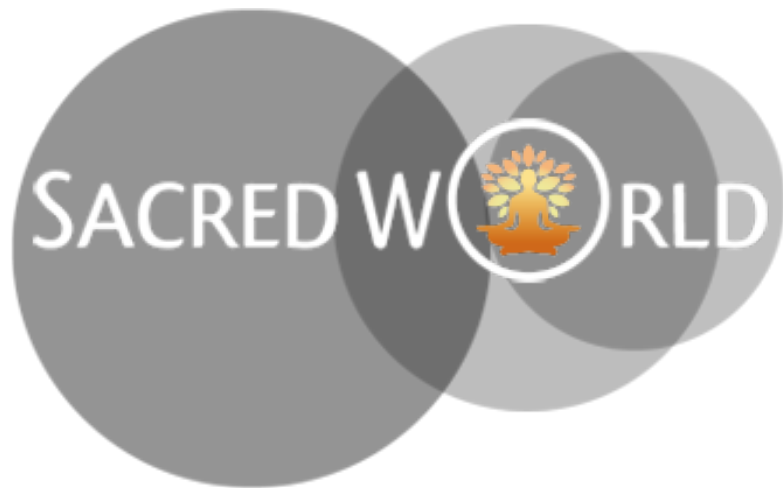
- Highly collaborative process, with **ideas** coming from a variety of individuals and institutions geographically distributed
- **Resources:** span from sensors developed at MIT to high-tech manufacturers in South-East Asia
- **Competences:** Indian artisans, Italian glass makers, leading interaction design researchers and practitioners, ...



SACRED W  RLD

Brings together **ideas**, **competences** and **resources**





## **Entrepreneurship**

- Design practice
- Museums and exhibitions
- Product design and commercialization (shop)

# How can design support entrepreneurship?

Entrepreneurship brings together ideas, competences, resources

Design can support entrepreneurship  
activating (sustaining, cutting) connections among diverse stakeholders  
thus favoring the circulation of ideas, competences and resources

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how can design support entrepreneurship?  
design-as-translation at metaLAB (Harvard)

# Academic entrepreneurship

- Usually associated with academic entrepreneurship:
  - innovation development and commercialization
  - intellectual asset management
  - university spin-offs
  - technology transfer and brokering
- Kingma defines **academic entrepreneurship as a way to engage with external communities to create value**

Kingma, Bruce R., ed. *Academic Entrepreneurship and Community Engagement: Scholarship in Action and the Syracuse Miracle*. Cheltenham, UK; Northampton, MA: Edward Elgar Publishing, 2011.

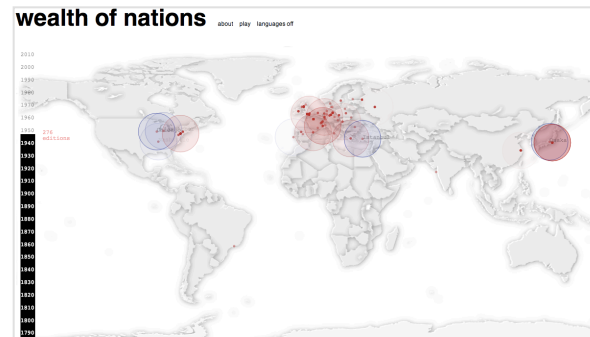
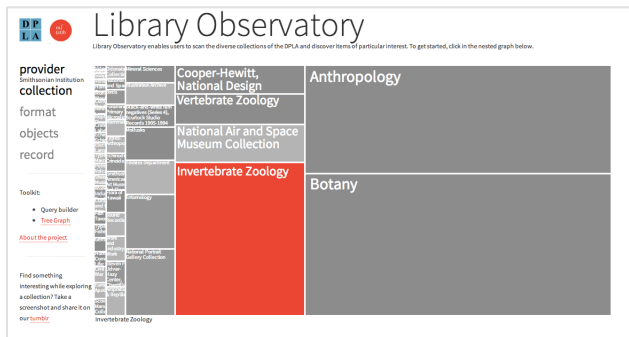
Video, The Copenhagen Wheel, MIT SENSEable City Lab/Superpedestrian, 2013

# Translation in academic entrepreneurship

- In academic entrepreneurship, **diverse stakeholders** coming from academia, cultural institutions, NGOs, industry, public sphere are involved at several levels, sometimes as early-stage co-creators, some other times as final users
- These stakeholders are located within their own cultural, economic, socio-material contexts, where diverse and **specific languages** and **agendas** are in place
- **Processes of translation are needed** to foster conversation and collaboration among these different languages and **to make knowledge produced by specific stakeholders** (e.g., academia) **relevant for other stakeholders** (e.g., people from industry) or **applicable in other contexts** (e.g., the market sphere)



metaLAB is a research and teaching unit at Harvard University dedicated to exploring and expanding the frontiers of networked culture in the arts and humanities. metaLAB's institutional home is the Berkman Center for Internet and Society



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Search: tokyo

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New Year Message from Hands On Tokyo  
http://www2.u-tokyo.ac.jp/news/index\_e.html  
November 04, 2011 1:27 AM  
via RUS

The University of Tokyo Environmental Radiation Info.  
http://www2.u-tokyo.ac.jp/news/index\_e.html  
November 04, 2011 1:27 AM  
via RUS

Situation improving... for Tokyo  
http://earthmassah.blogspot.com/2011/03/situation-improving-for-tokyo.html  
November 04, 2011 1:28 AM  
via RUS

This is Not A Drill: Tokyo Earthquake Experience  
http://theaction.tumblr.com/post/11109266008/this-is-not-a-drill  
August 09, 2011 7:30 PM  
via RUS

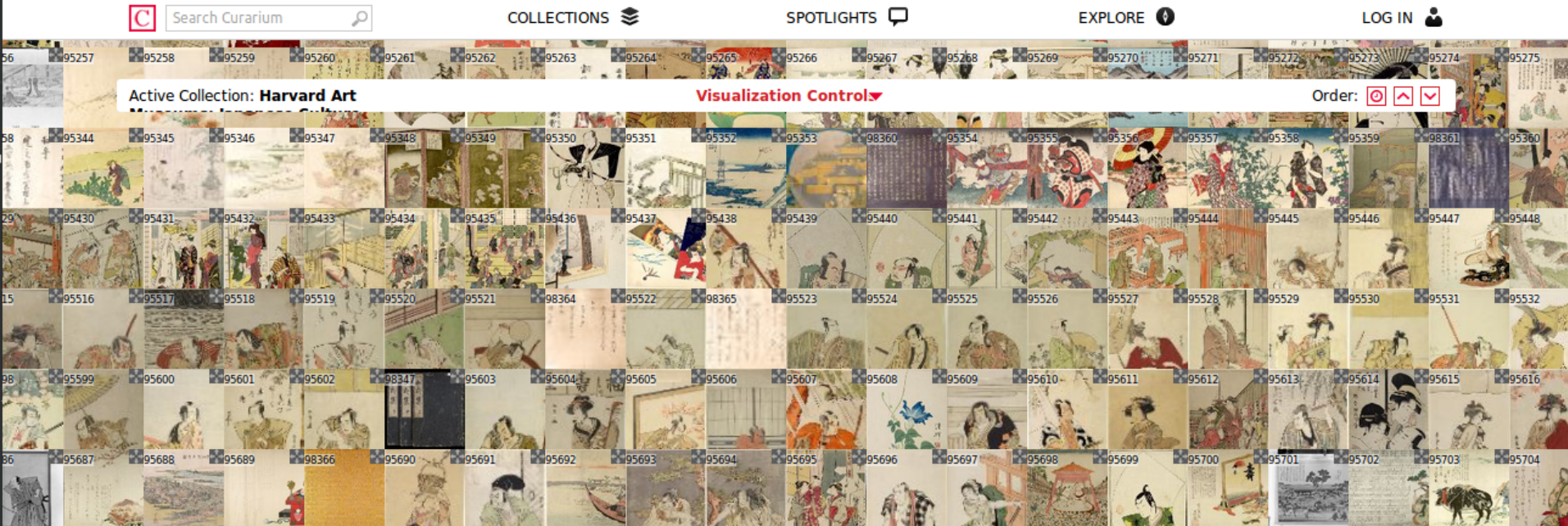
News from Hands On Tokyo April 2011 (Japanese)  
http://www2.u-tokyo.ac.jp/news/2011/04/01/20110401news110000000007.html  
August 09, 2011 7:30 PM  
via RUS

# Design and academic entrepreneurship

Design plays an important role in connecting academia with external stakeholders and in sustaining these interactions through processes of:

- Translations
- Iterative prototyping
- Participatory design





## Example: Curarium

- Curarium is a web-based interactive platform for exploring, analyzing, and making arguments about art collections and the objects they include
- Users can annotate objects, tell stories about them and curate collections in a collaborative way

## + Bucket (HAKO)

Paintings with Christ

Battles

Diana and Actaeon [i]

Christ on the Cross with the Virgin,  
the Holy Women, St. John the  
Evangelist, Nicodemus and soldiers  
[i]Christ on the Cross with St. Thomas  
Aquinas and St. Augustine [i]

Chivalric scene [i]

Ippolito Riminaldi with his son [i]

Giulio della Torre in armor [i]

Poet holding a crown of laurel [i]

Giulio della Torre in armor



## +

fabric pattern similar to  
[\[Chivalric scene \[i\]\]](#)

EOVES - translation?

similarity to crest in [\[Diana and  
Actaeon \[i\]\]](#)?

Video, Curarium, 2015

# Stakeholders interested in Curarium

- **Art curators, museums:** as archival tool
- **Industry:** use Curarium to offer services to the market
- **Government bodies:** funding and work at a policy level for open standards in archival processes and practices
- **Academia:** use Curarium for research projects
- **General public:** as final users
- **NGOs**
- ...

# The need for translation

- Concept of '**orphan work**': archivists and art curators are familiar with it, but how about an entrepreneur or an academic coming from another discipline?
- Concept of '**interoperability of data models**': professionals with a technological background can understand it, but how about a representative from government?



# Iterative prototyping

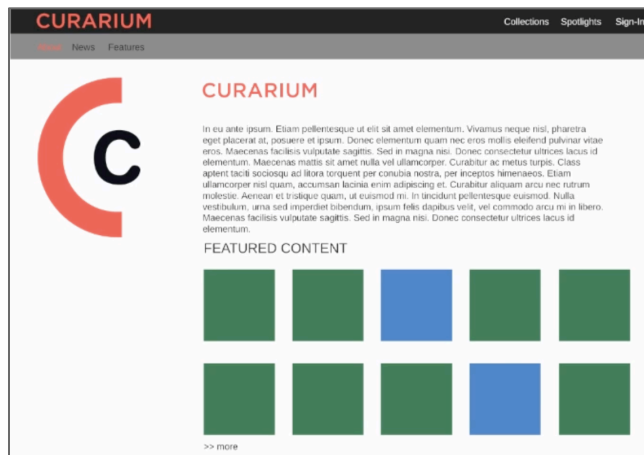
- Various instances of translation (iterations, such as sketches or prototypes) are presented to multiple stakeholders
- Iterative design loops are strategically important for several reasons:
  - to release projects also when they are still at an **unfinished stage**
  - to test them in **different contexts of use**
  - and, ultimately, **to gather feedback from diverse audiences**

**This unfinished dimension gives external stakeholders the impression that they can still contribute and shape the design outcomes.**

# Participatory design

Participation of multiple stakeholders to various stages of the design process:

- **Brainstorming sessions** to define design concepts
- **Workshops** to design prototypes in a collaborative way



Design concept elaborated for a brainstorming session



Prezi presentation elaborated during a workshop

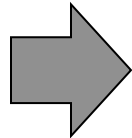




# Design and academic entrepreneurship

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- A. Design-as-translation
- B. Iterative prototyping
- C. Participatory design



as ways to **connect and align ideas, resources, competences**



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Emily Richards



**ZEEGA**

is the easiest way to create and share interactive videos. Learn more.

## Design and academic entrepreneurship

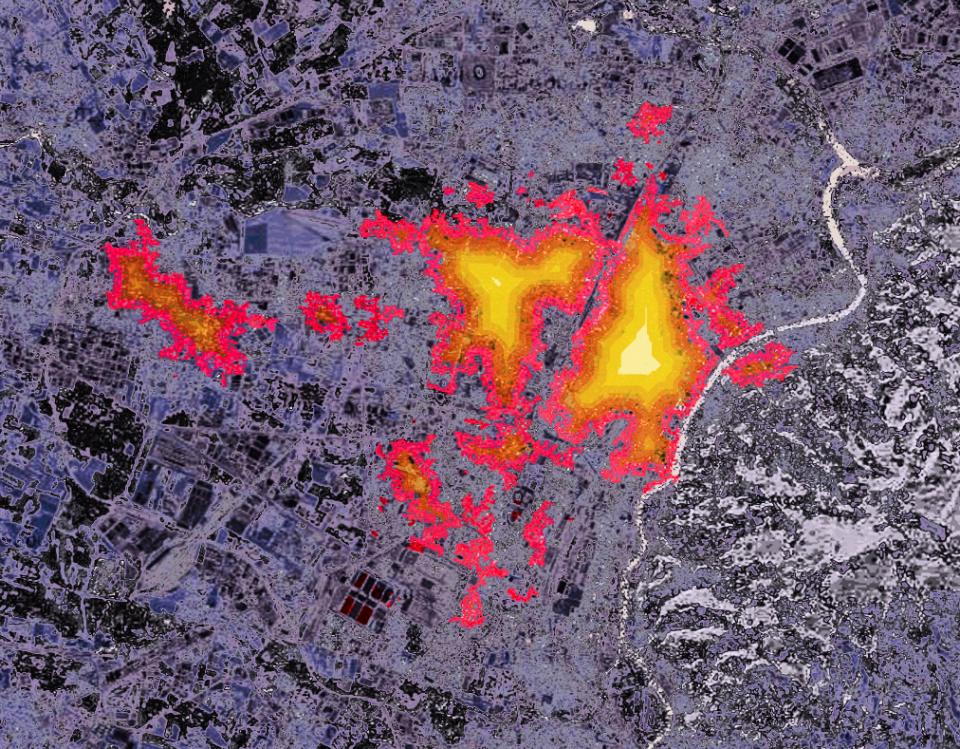
- Patents
- Collaborative projects with external sponsors
- Start-ups

Academic entrepreneurship: creating value with external communities

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how can design support entrepreneurship?

Urban Sensing




## Urban Sensing

EU-funded research project, aimed at creating a software platform composed of 4 elements:

1. A harvesting engine that collects real-time data streams from geolocalized user-generated content (Twitter, Facebook, Foursquare, Flickr)
2. A text mining engine and a data clustering layer
3. A visualization engine
4. A web interface that allows users to perform specific searches within pre-defined domains


Turin, October 2011. distribution of user generated content in Italian (left image) and Arabic (right image)



In 1990,  
**2.4 million people**  
worldwide had cellular subscriptions,

and by the end of 2014,  
the number of mobile cellular  
subscriptions worldwide reached  
approximately

**6.7 billion.**

A young woman with dark hair, wearing a black and white striped long-sleeved shirt and large hoop earrings, is smiling and taking a selfie with a red smartphone. She is holding several shopping bags, including a red one and a brown one. The background is a blurred city street with buildings.

Trying to understand what people share on social media and why they share it in specific geo-spatial locations. What kind of knowledge can we extract from this information?

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how?

Spatial distribution

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**spatial distributions  
(clusters and concentration)  
of the people that wants  
to share their position.**



---

how?

Spatial distribution

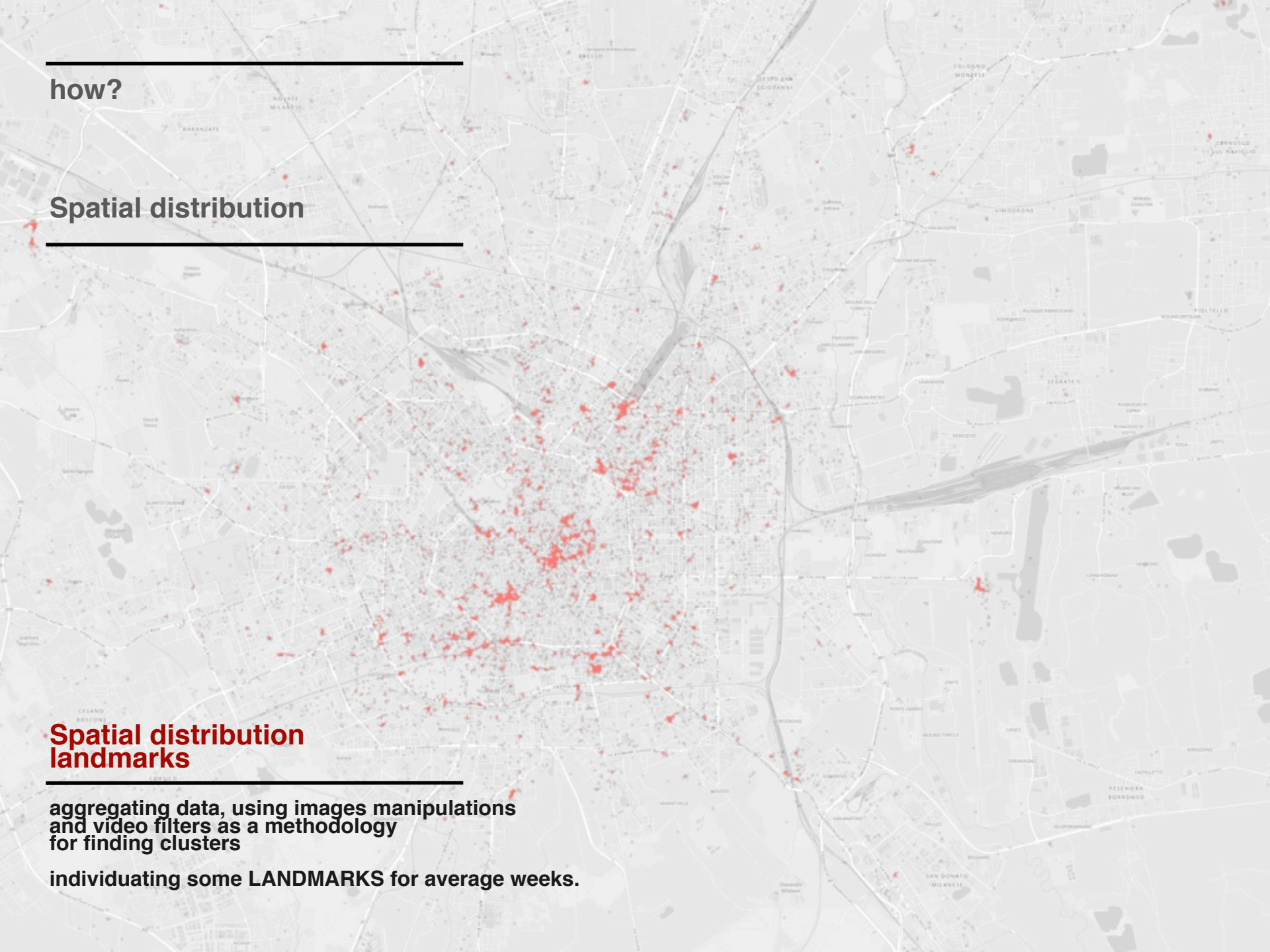
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**Spatial distribution  
landmarks**

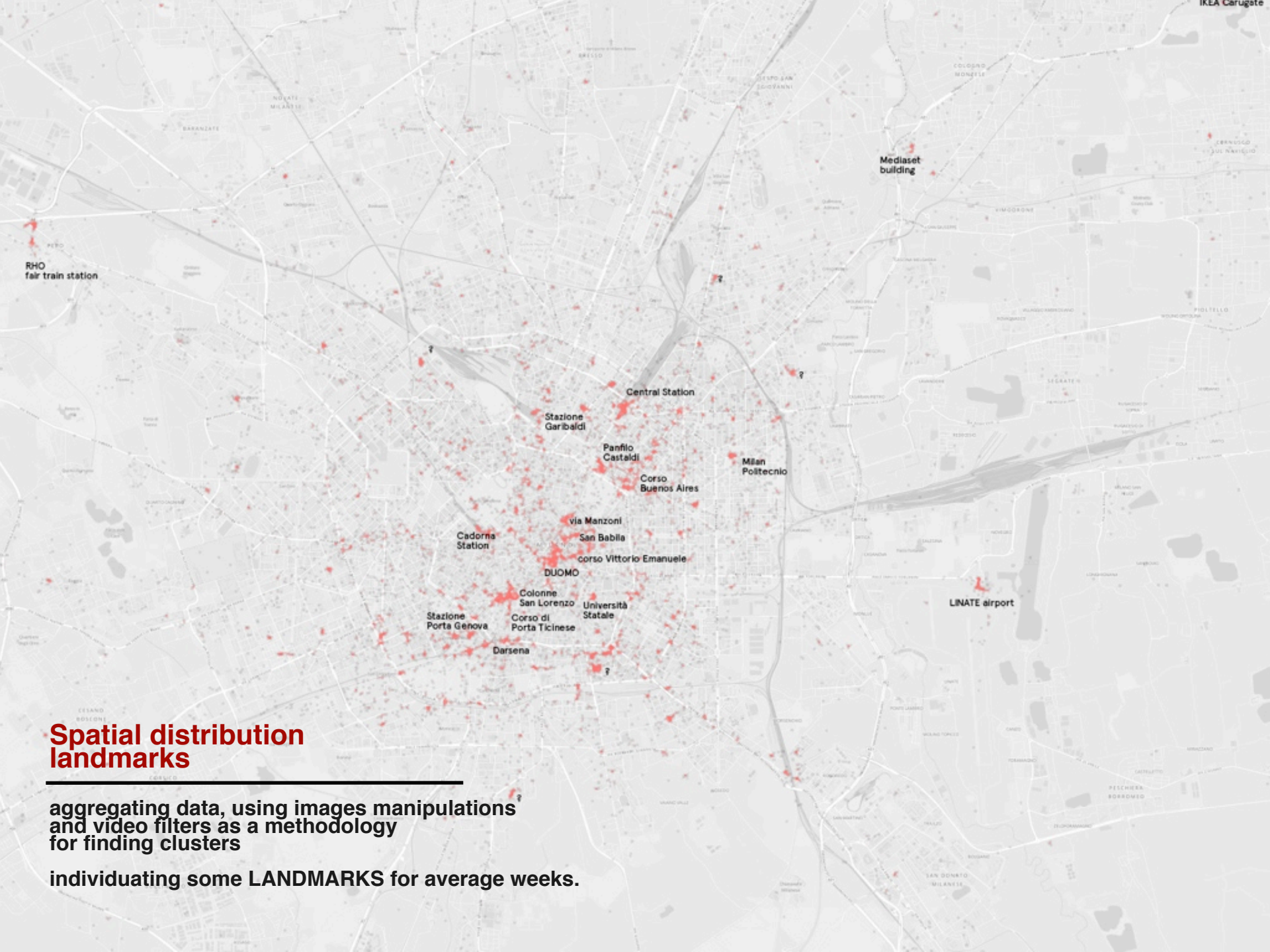
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aggregating data, using images manipulations  
and video filters as a methodology  
for finding clusters

individuating some LANDMARKS for average weeks.





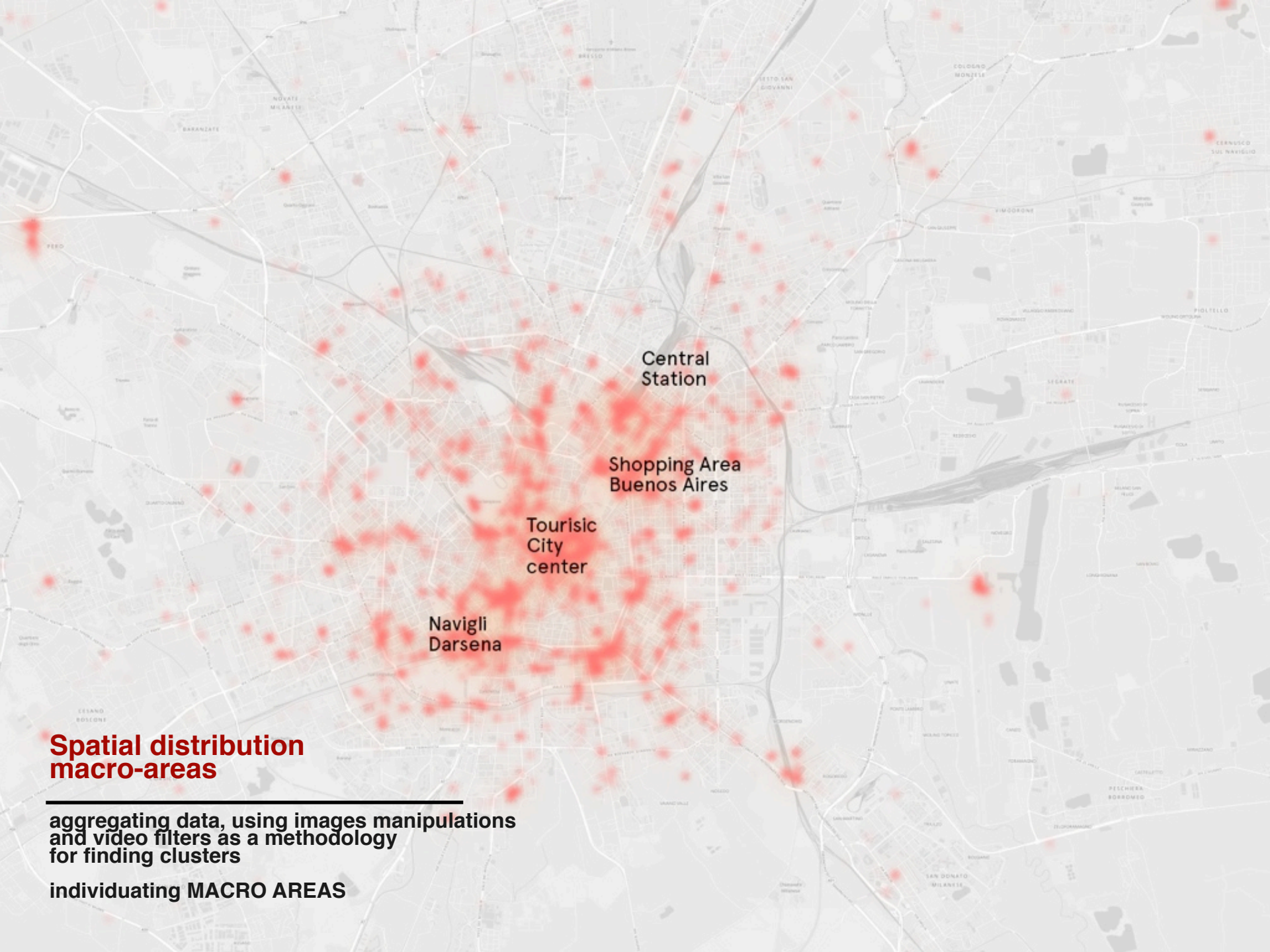


# Spatial distribution landmarks

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aggregating data, using images manipulations and video filters as a methodology for finding clusters

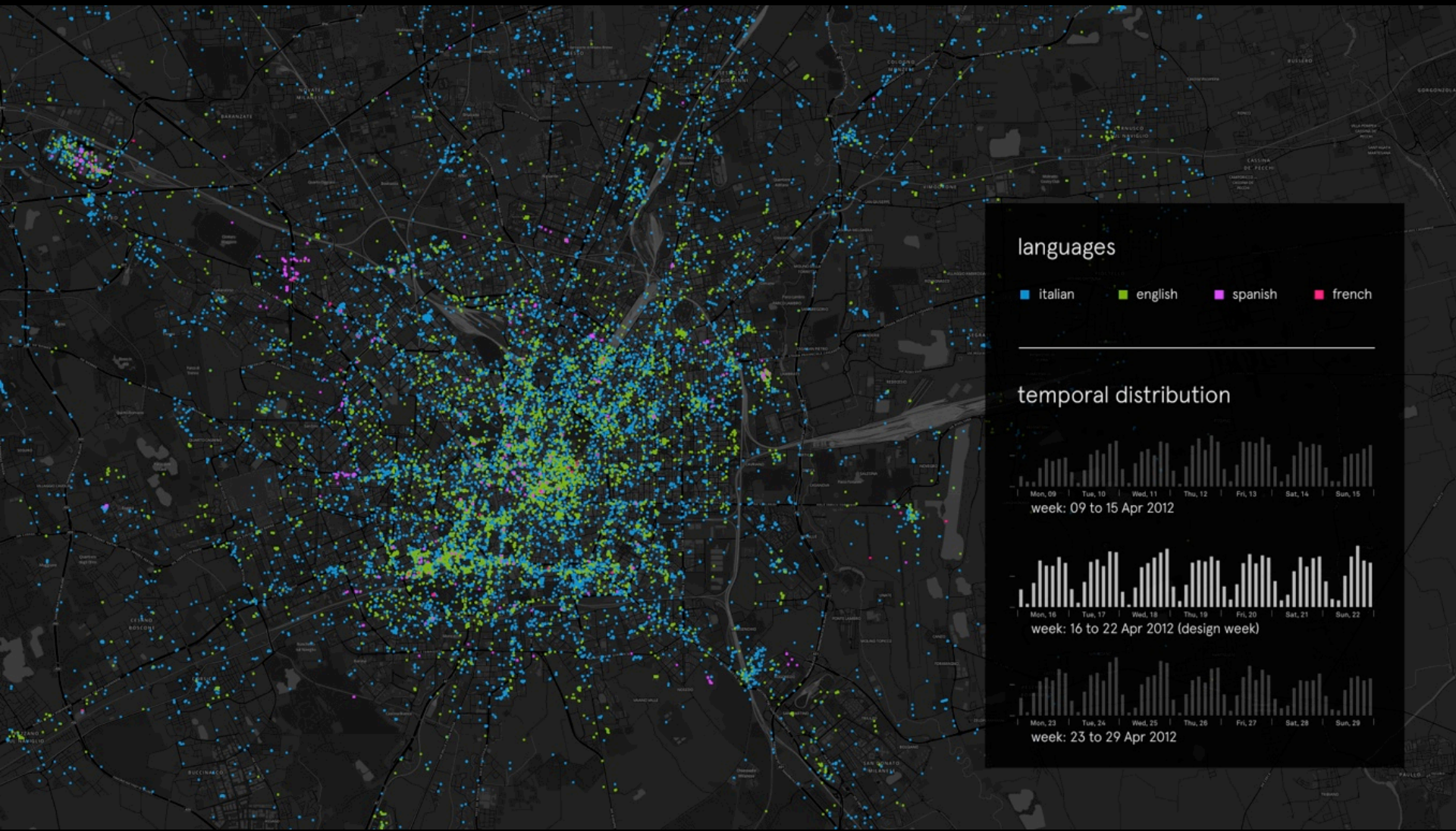
individuating some LANDMARKS for average weeks.



## **Spatial distribution macro-areas**

**aggregating data, using images manipulations  
and video filters as a methodology  
for finding clusters**

**individuating MACRO AREAS**



## languages

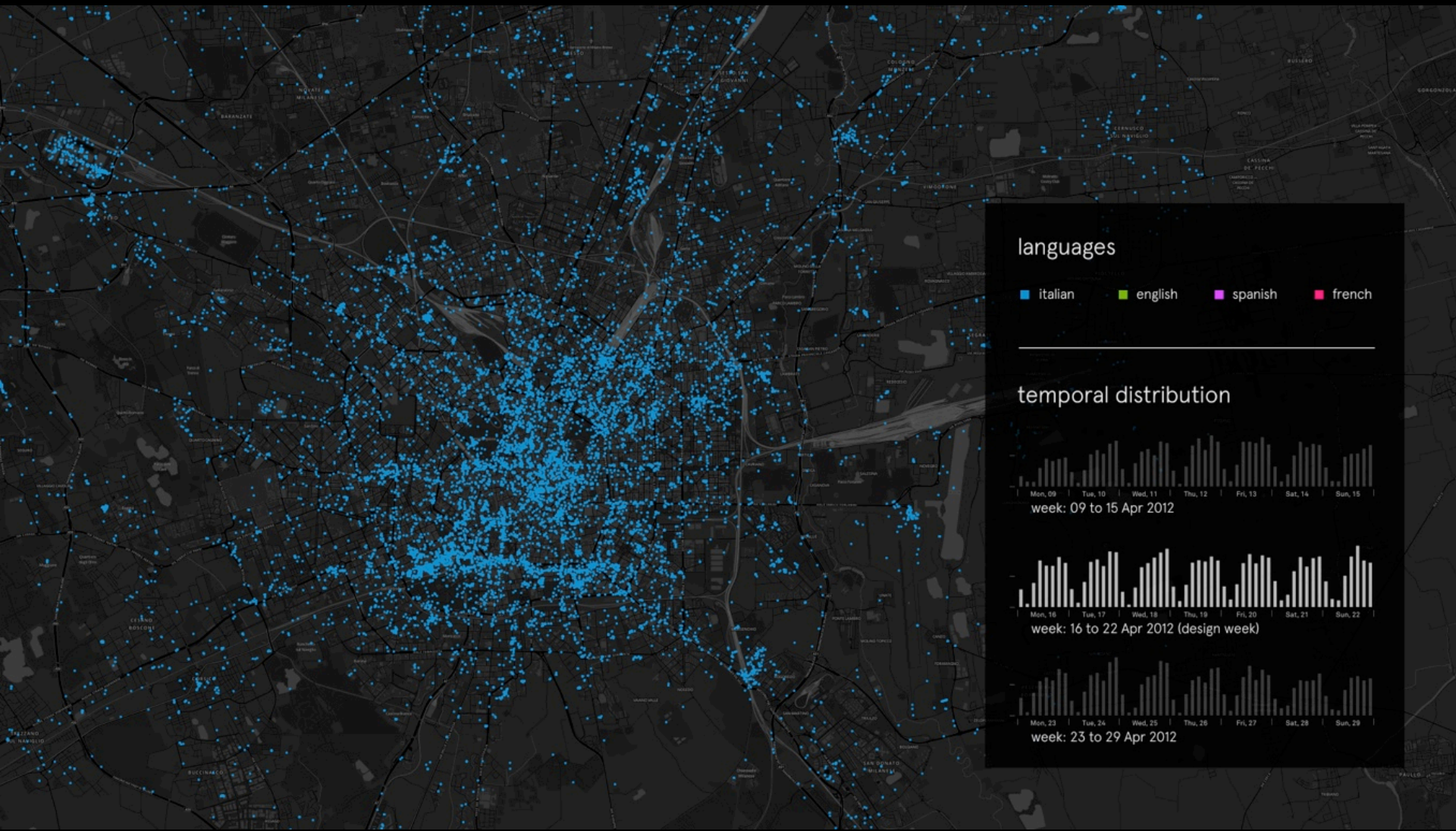
■ italian ■ english ■ spanish ■ french

## temporal distribution



## groups within the city

differences between how Italians, english, spanish or even the emergent spoken languages use the city in terms of temporality and spatial distribution.



## languages

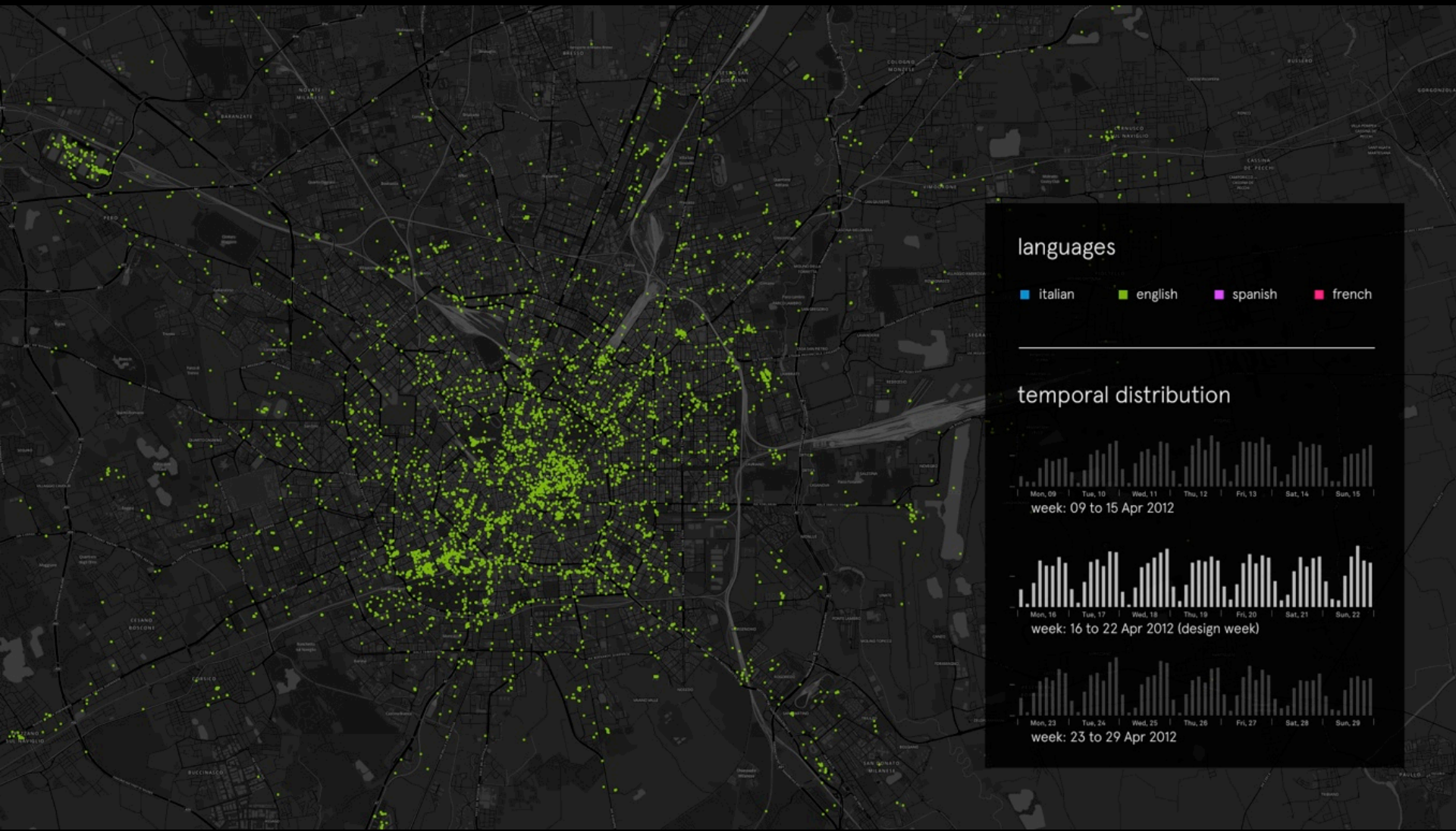
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italian   english   spanish   french

## temporal distribution



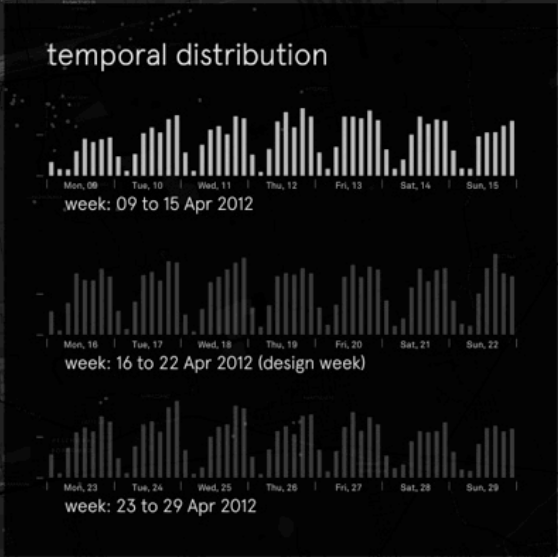
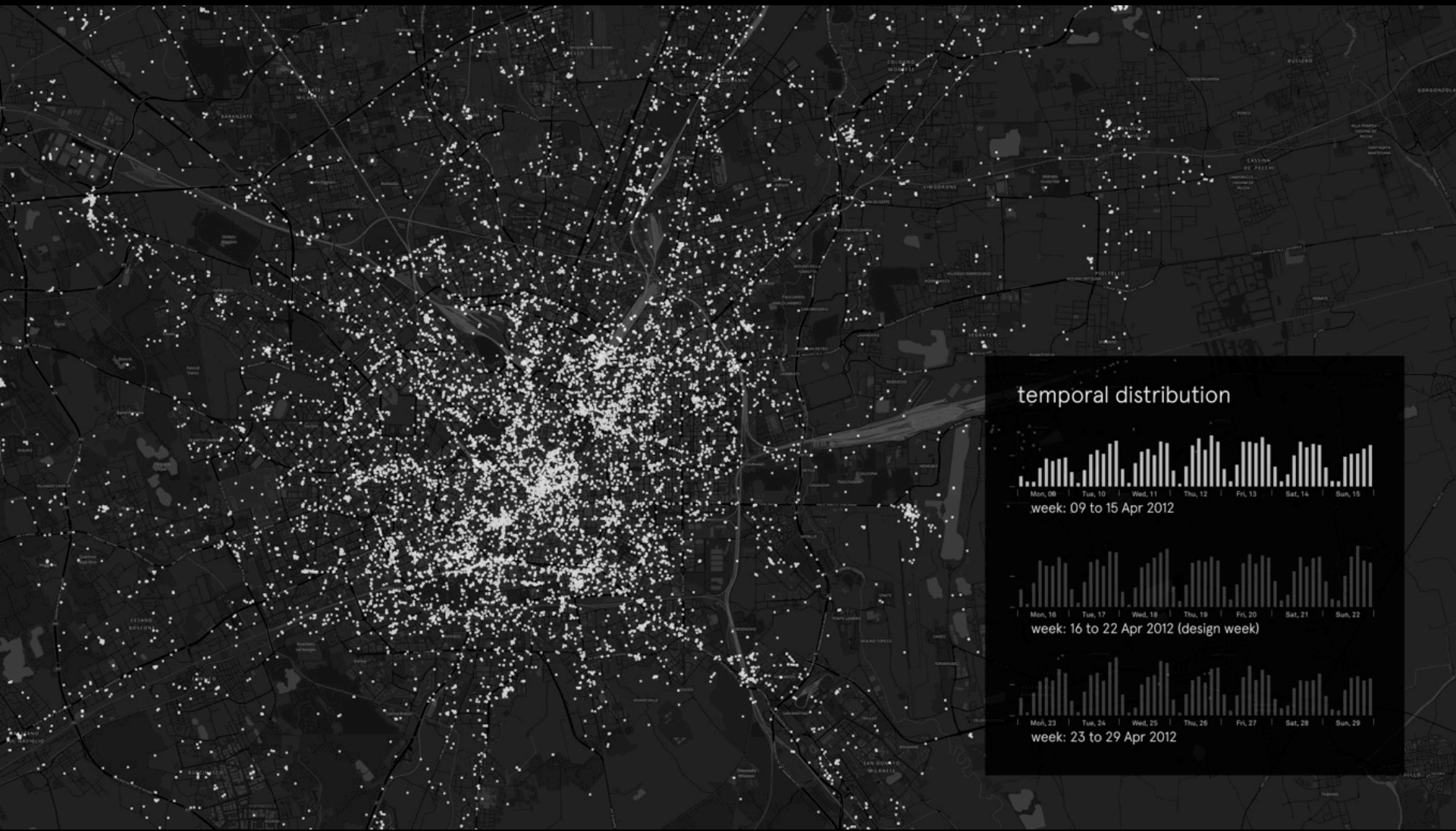
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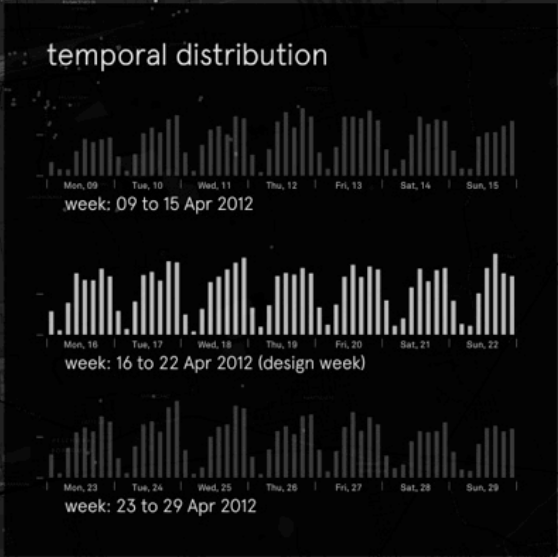


## temporal distribution

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the possibility to depict the city as it changes over times

(design week)



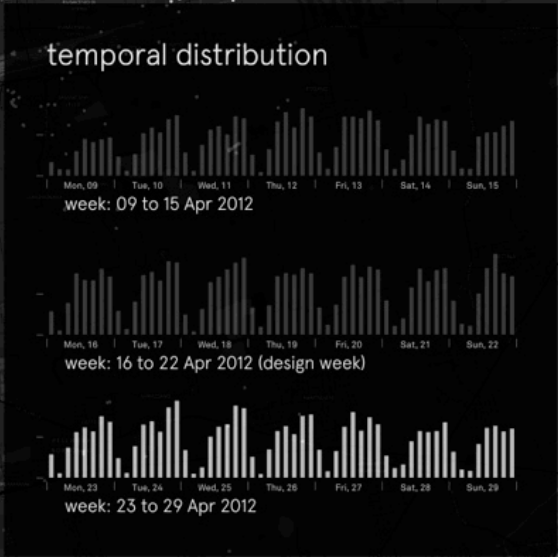
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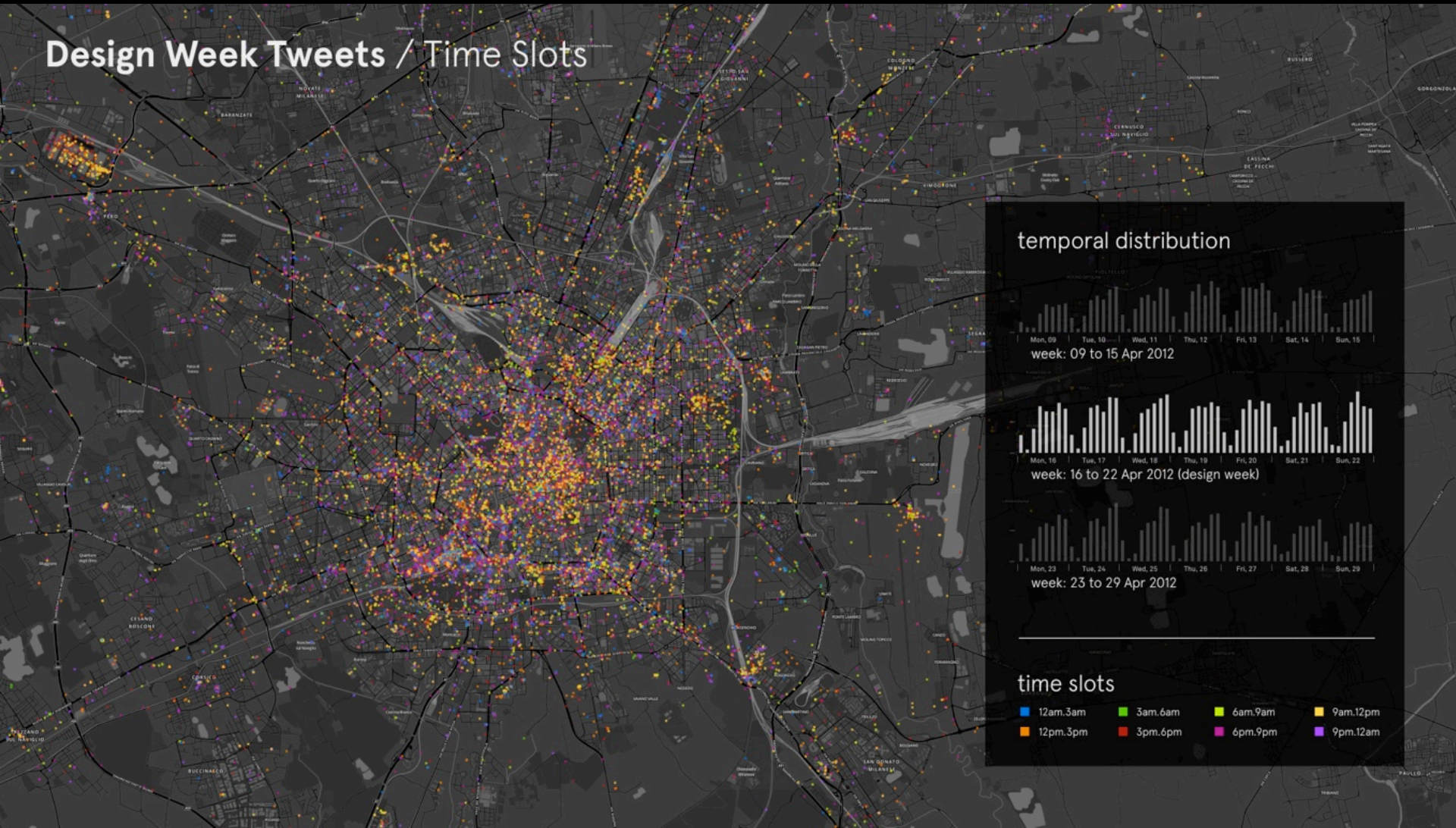
## temporal distribution

---

the possibility to depict the city as it changes over times

(design week)

# Design Week Tweets / Time Slots



## the temporal dimension

difference between the spatial distribution of people during the different times of the day, measuring the rhythm of the city.

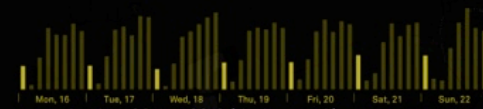
0.00 - 3.00 am



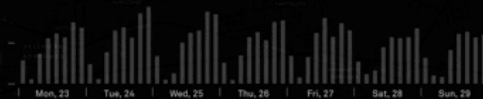
### temporal distribution



week: 09 to 15 Apr 2012



week: 16 to 22 Apr 2012 (design week)



week: 23 to 29 Apr 2012

## the temporal dimension

difference between the spatial distribution of people during the different times of the day, measuring the rhythm of the city.

3.00 - 6.00 am



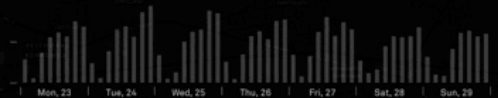
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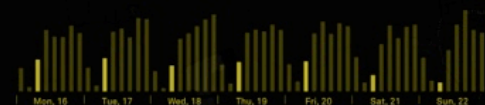
6.00 - 9.00 am



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week: 16 to 22 Apr 2012 (design week)



week: 23 to 29 Apr 2012

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9.00 - 12.00 am



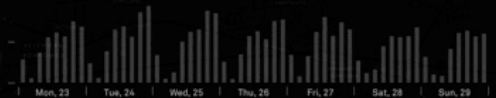
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### temporal distribution



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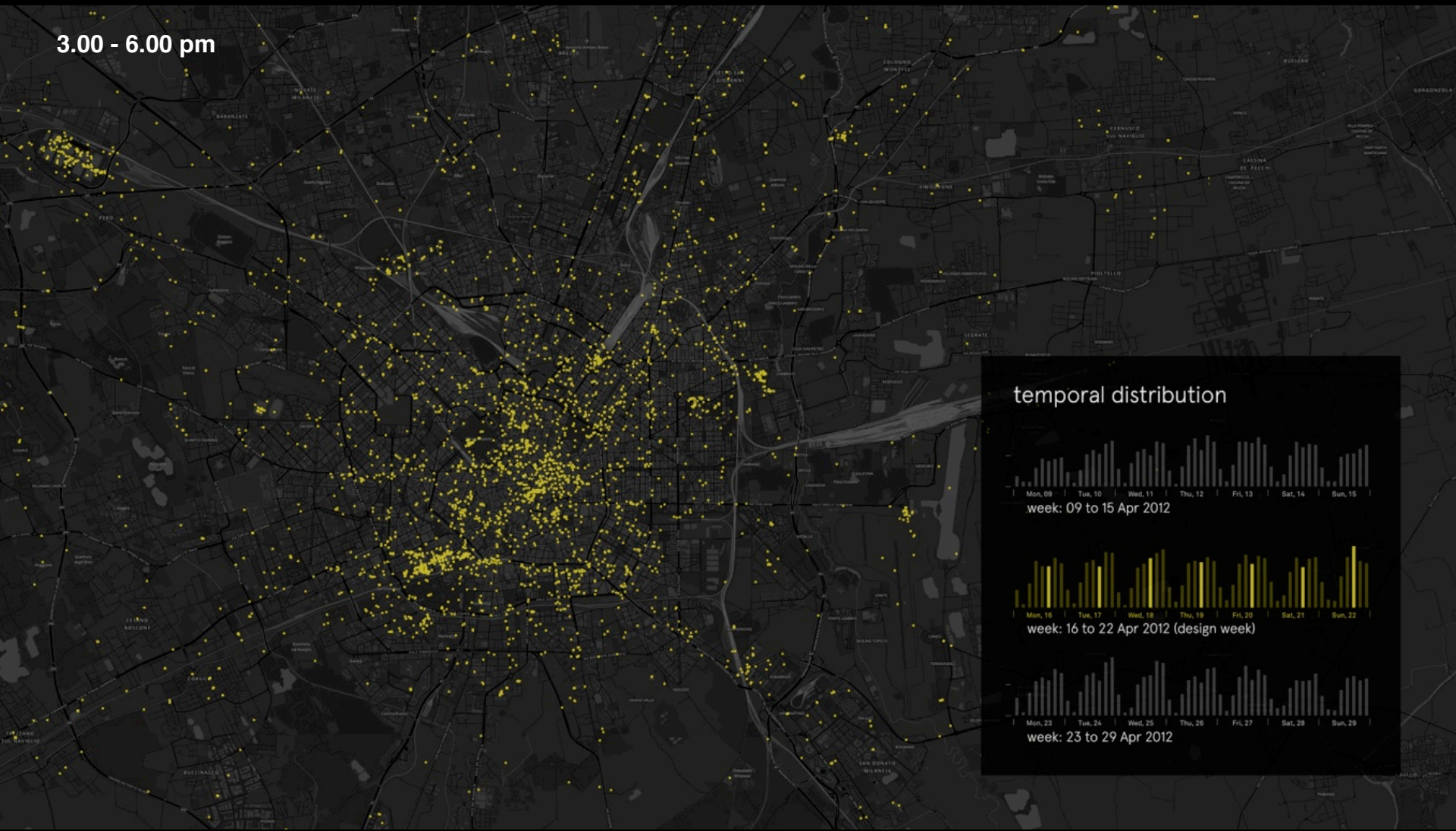


week: 23 to 29 Apr 2012

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3.00 - 6.00 pm



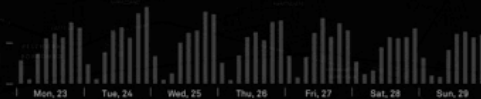
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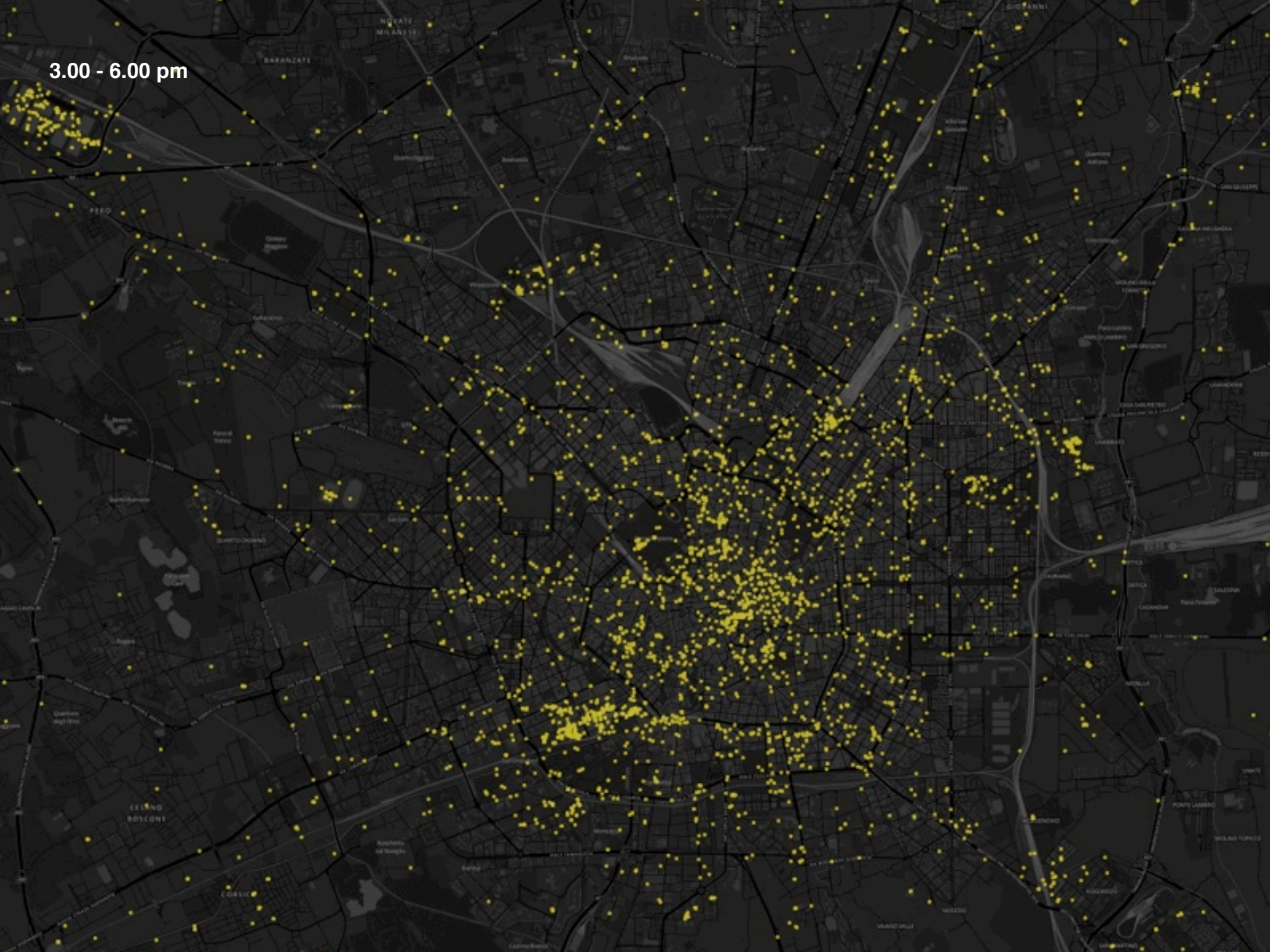
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3.00 - 6.00 pm



6.00 - 9.00 pm



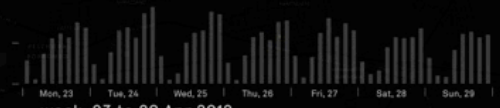
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**LAYERS**  
351364 rows

**Milan 3 Months**   
351364 rows / Twitter / 24 Jun 2013 - 24 Sep 2013

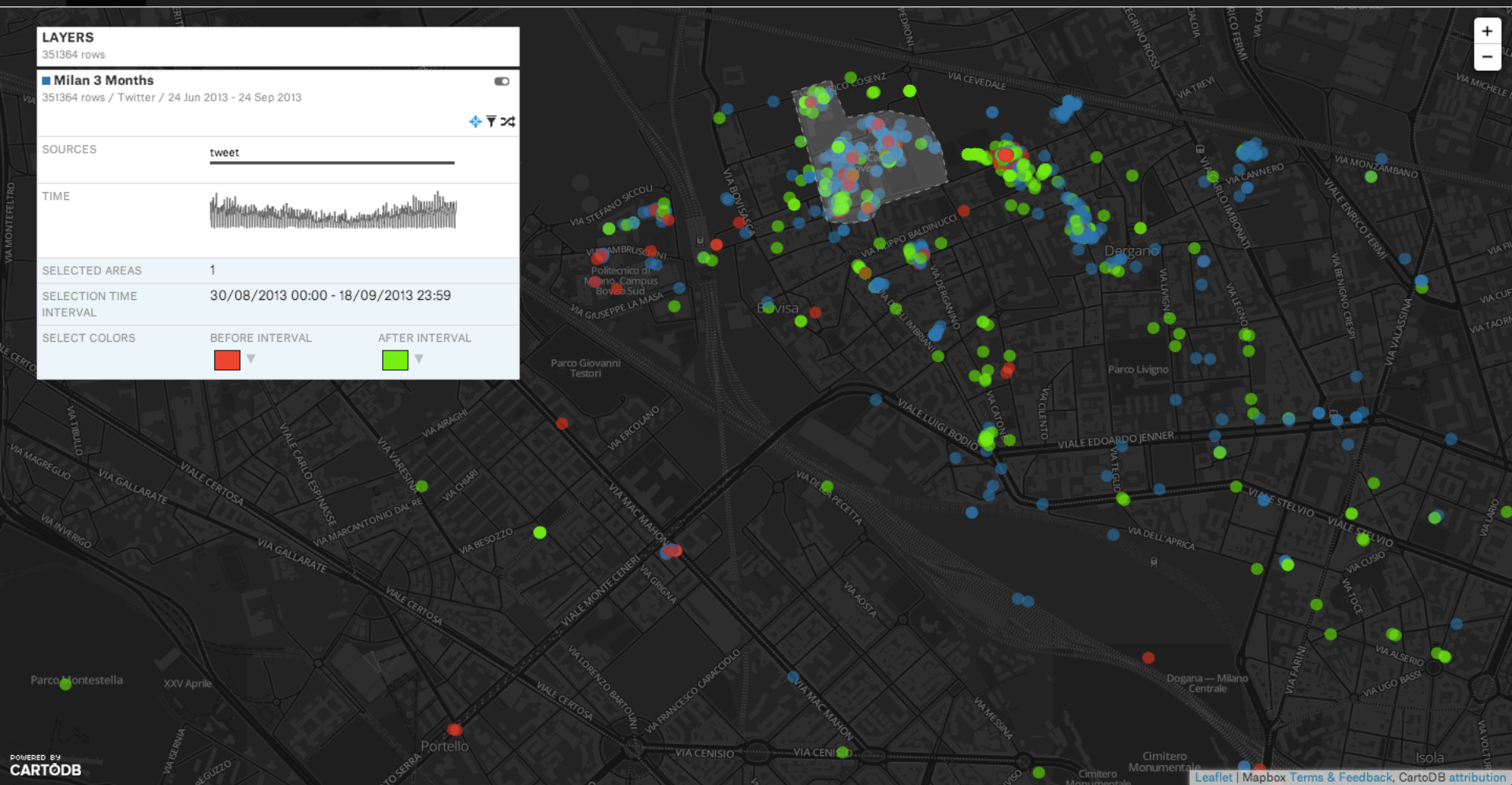
**SOURCES**  
tweet

**TIME**

**SELECTED AREAS**  
1

**SELECTION TIME INTERVAL**  
30/08/2013 00:00 - 18/09/2013 23:59

**SELECT COLORS**  
BEFORE INTERVAL: ■ AFTER INTERVAL: ■



## tracking movements across the city

tracking single users and their movements over time.

## LAYERS

351364 rows

## Milan 3 Months

351364 rows / Twitter / 24 Jun 2013 - 24 Sep 2013

## SOURCES

tweet

## TIME



## SELECTED AREAS

1

## SELECTION TIME

30/08/2013 00:00 - 18/09/2013 23:59

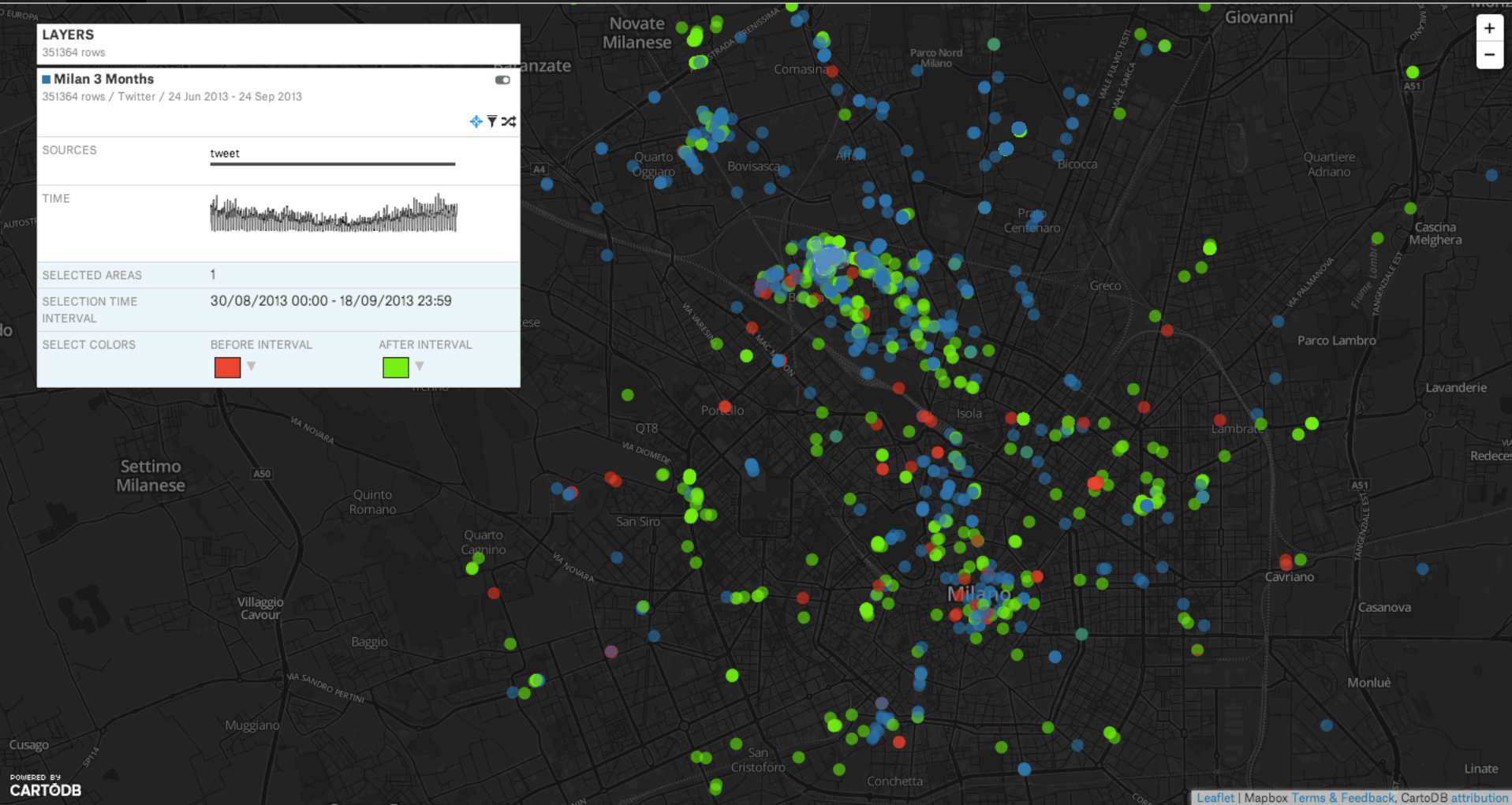
## INTERVAL

## SELECT COLORS

BEFORE INTERVAL

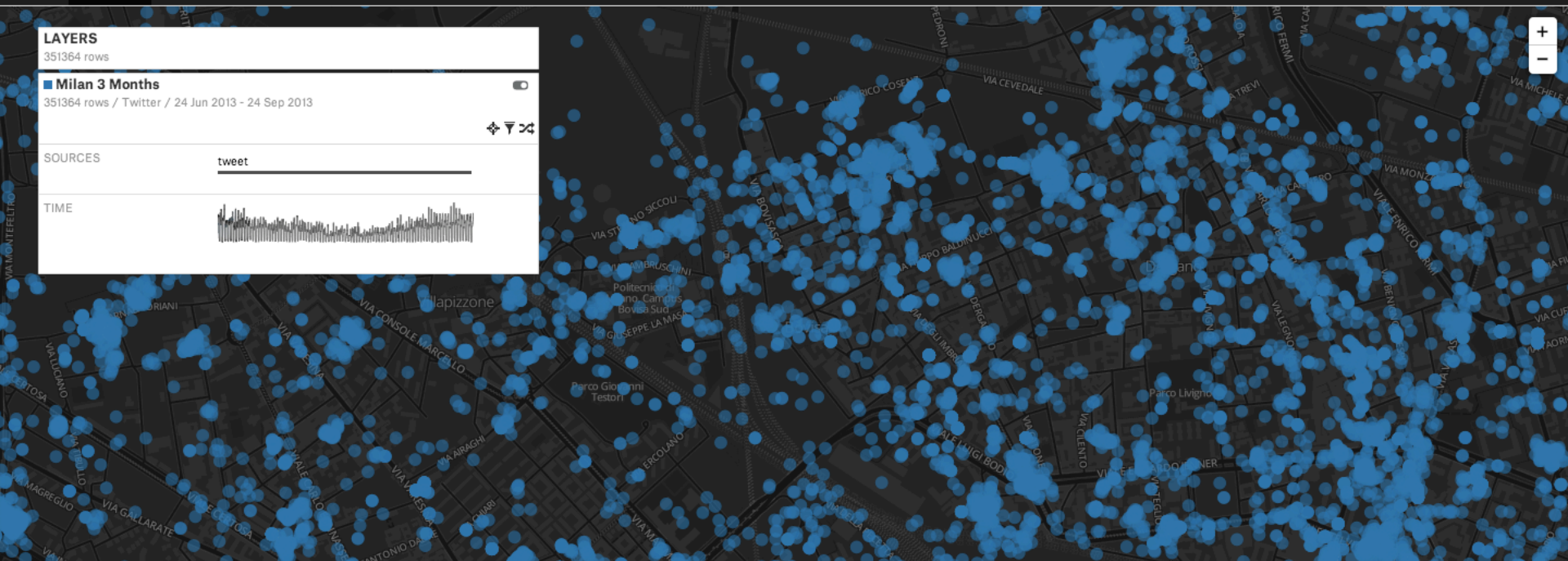


AFTER INTERVAL



tracking movements across the city

tracking single users and their movements over time.



## In which areas of the city do students of Milan Politecnico tend to go?

They mainly gravitate around the northwestern area of Milan and move toward the center of the city along the Ferrovie Nord train lines. Specific clusters of contributions can be noticed close to the **peripheral mall Metropoli** (northwest of the campus), in the main Politecnico di Milano campus (Campus Leonardo da Vinci, located southeast of the Bovisa campus), in **the central commercial areas** of **Duomo** and **Brera**, and in some evening and night venues around Navigli and **Porta Venezia**.

## Urban Sensing

# How design supported entrepreneurship

- Mixed consortium: research centers + SMEs
- Research is strongly oriented towards market exploitation
- Design as a way of connecting all the partners and the final users
  - Initial product (service) design
  - User research and testing
  - Iterative process, multiple prototypes, usability tests
  - Participatory design

## Urban Sensing

# Benefits of using design

- Aligning academic and industrial partners (different languages, needs and desires)
- Bringing together ideas, competences and resources distributed across 7 partners and 4 EU countries
- Features of the final product designed at an early stage together with potential customers
- User experience design tested with final users (4 usability tests)
- Faster time-to-market: product ready to be commercialized immediately at the end of the research project



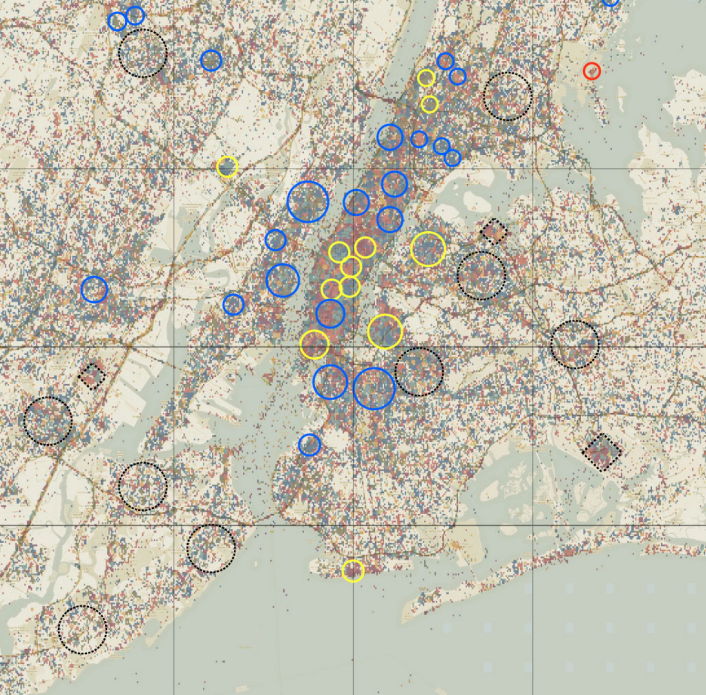
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# final remarks

connections, disconnections and dilemmas

# Final remarks

- Design can help entrepreneurship in connecting ideas, resources and competences
- Design can create bridges among different geographic, cultural, social worlds
- Design can support academia in entrepreneurial ventures



## Detecting anomalies and setting control systems

In the next phase of Urban Sensing, the system will detect anomalies or deviations from regular patterns of social media contributions. In case of peaks of contributions from specific areas of the city, a swarm of drones equipped with videocameras will be sent to monitor the areas.

**Funding agencies**

**Industry**

Sensor technologies  
HW and SW

**Cultural institutions**

**Research**

Social media analysis  
Data visualization

**Military**

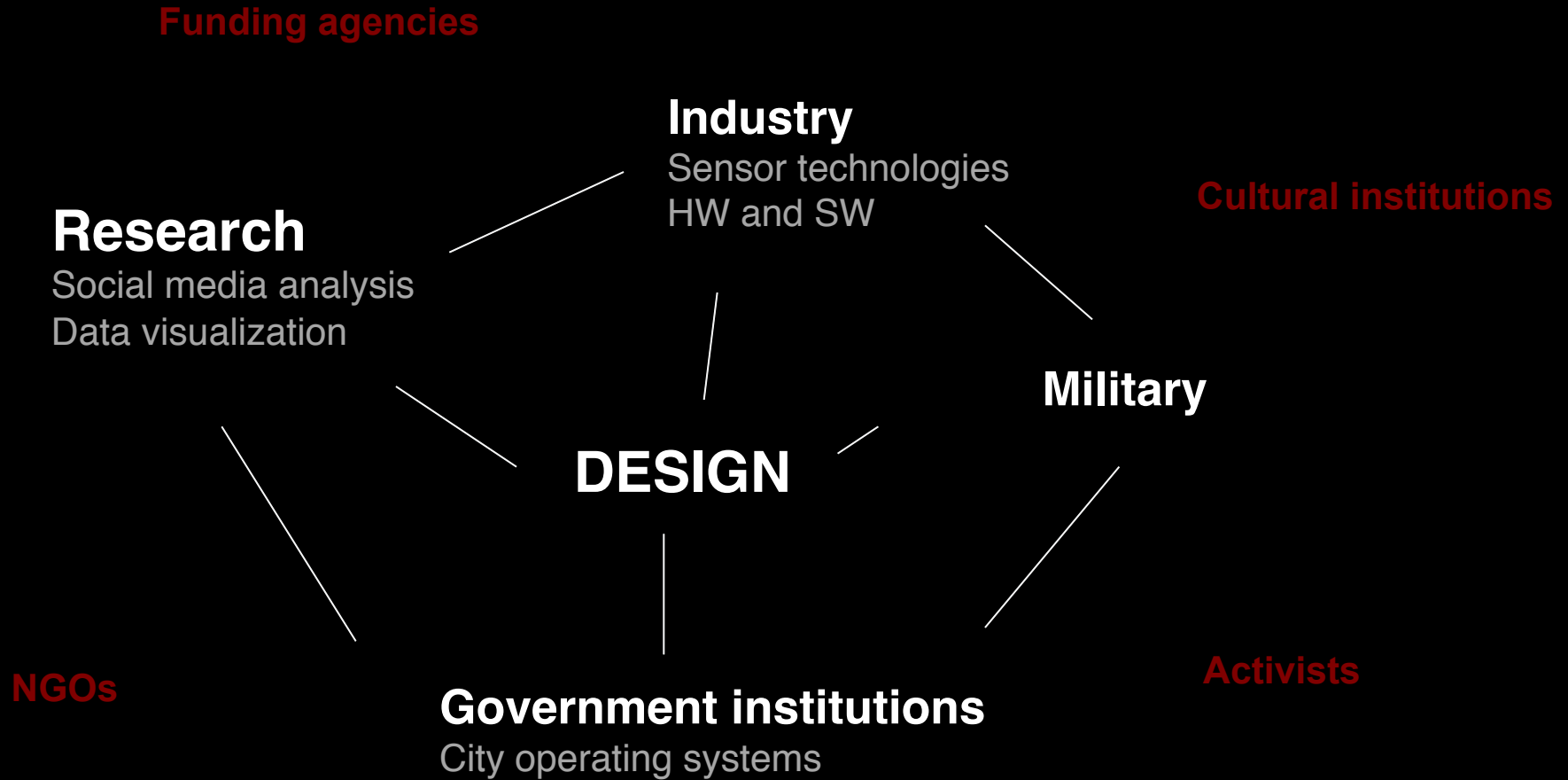
**DESIGN**

**NGOs**

**Government institutions**

**Activists**

City operating systems



# Ethical dilemmas

- Very problematic project in terms of surveillance, control, privacy
- Economic and financial viability of a lab (5 researchers) for 3 years
- **To what extent should research maintain some degrees of independence from the market?**
  - To what extent should researchers be granted some **levels of independence** in order to have the freedom to follow their research trajectories and/or express critical positions?
  - **To what extent is academic research accountable to external stakeholders** (industry, NGOs, government, citizens)?
  - **To what extent can or should these external stakeholders be an active component in shaping the course of academic research?**

# Connections and disconnections

- Design creates connections and aligns stakeholders
- But also elicits and fuels controversy

# thank you

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## Credits

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