Making the museum a Senseable Space: an IOT solution to discover visitor's behavior

Roberto Pierdicca
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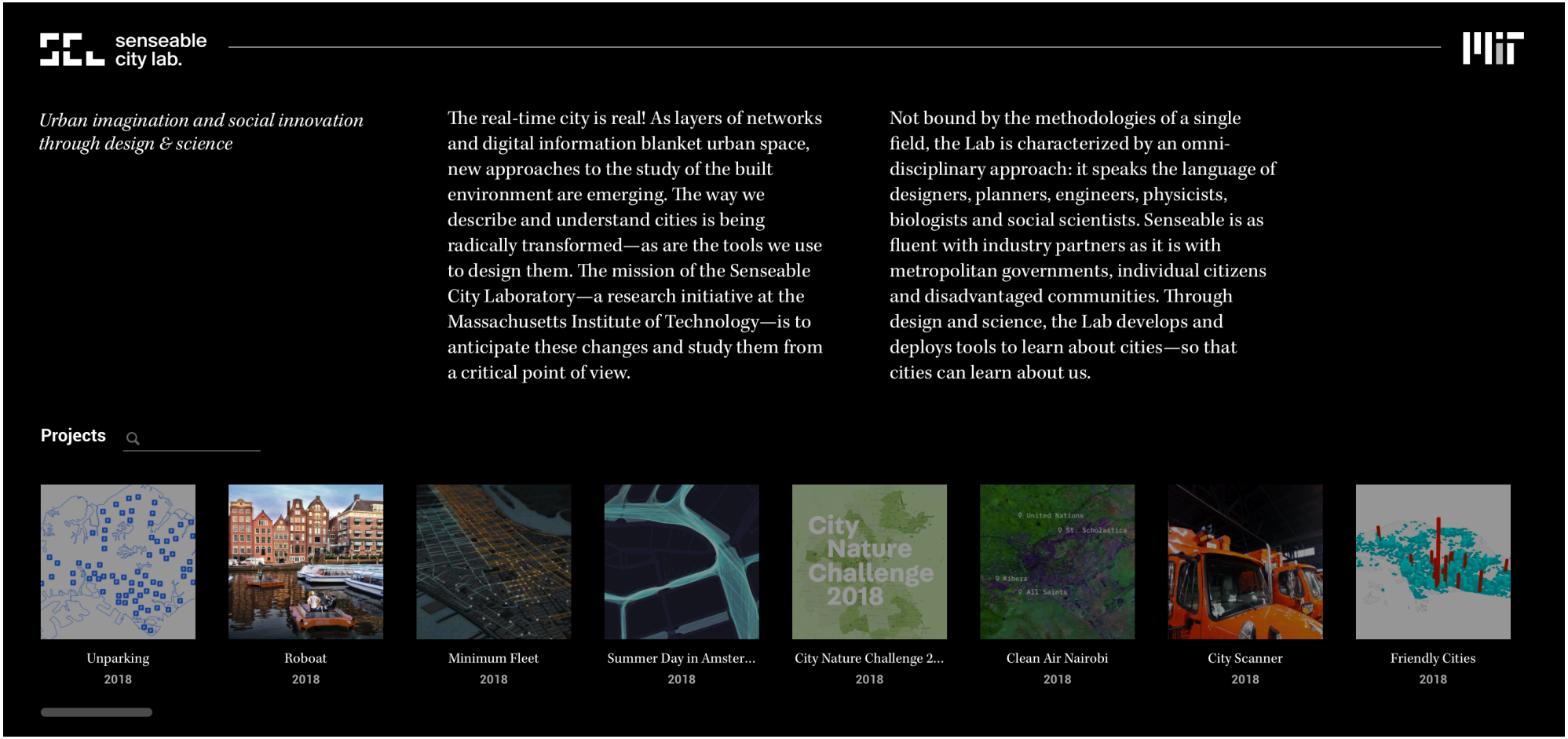
We coined the term ***Senseable Spaces***, to define the kinds of spaces able to provide users with contextual services, to measure and analyze their dynamics and to react accordingly, in a seamless exchange of information.



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From Augmented Spaces to *Senseable Spaces*

Create research platforms on the relationship between Information and Communication Technologies (ICT) and the production of Public Spaces, and their relevance to sustainable urban development. The impacts of this relationship will be explored from social, ecological and urban design perspectives. ICT is a driving force, media and tool, which operates as a mediator between users and their virtual and real worlds.

USERS

VISITORS/TOURISTS

Interactive visit of a Public Open Spaces
Improved way finding
Improved access to not accessible areas
Creation of a participatory environment

PLANNER

Improve tourism attractively
Promotion of Points of Interest
Digital Footprints and User Generated Data analysis
Improve the decision making process

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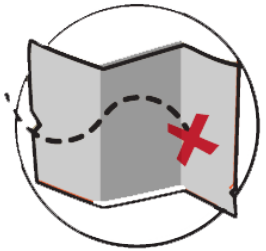
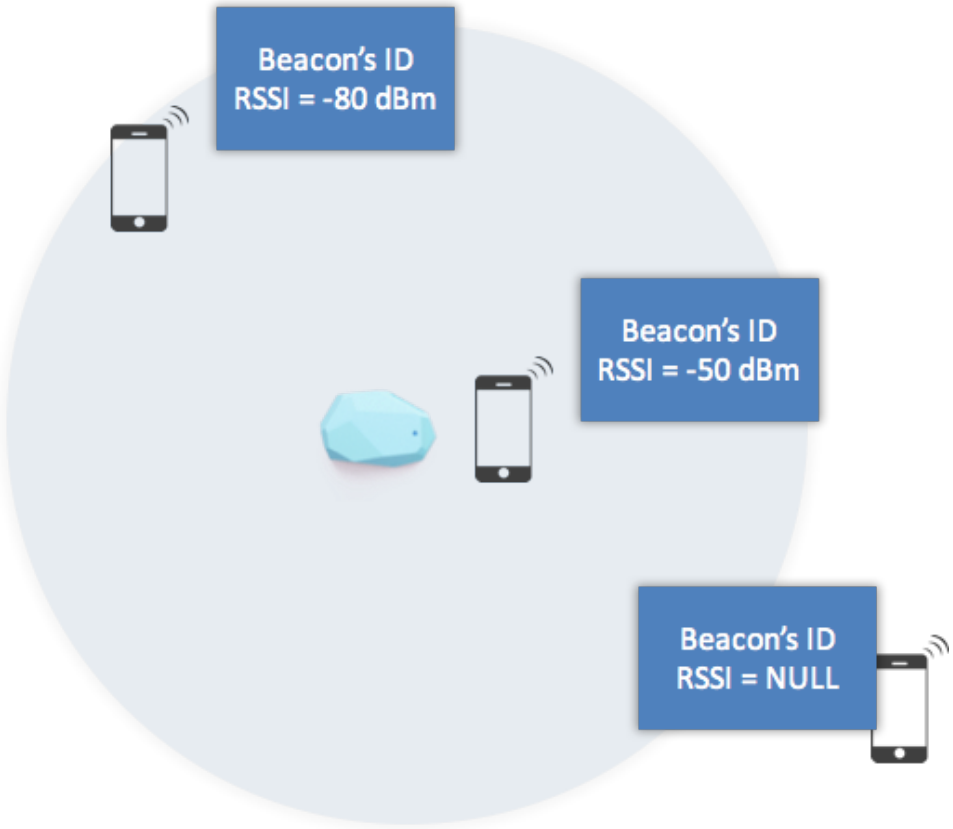
CASE STUDIES

Sharper - the european researchers night

Cyberparks - the relationship between ICT and Public Open Spaces



Rocca di Gradara - A museum as a *senseable space*



Computation of RSSI for the calculation of the distance

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Geo-localization of human movements at mass events: SHARPER

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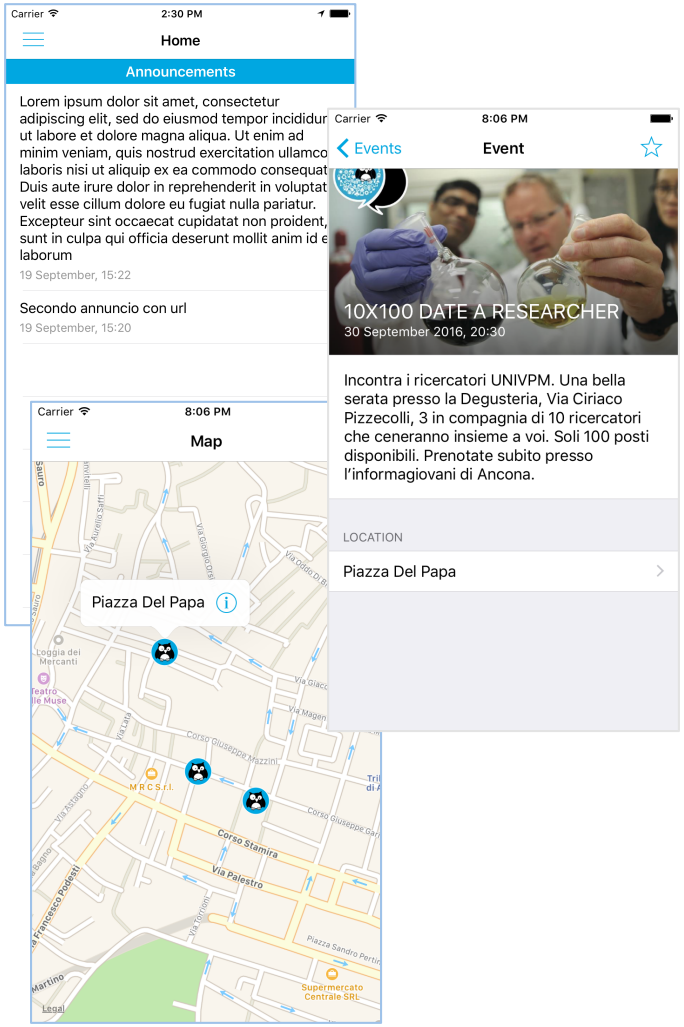
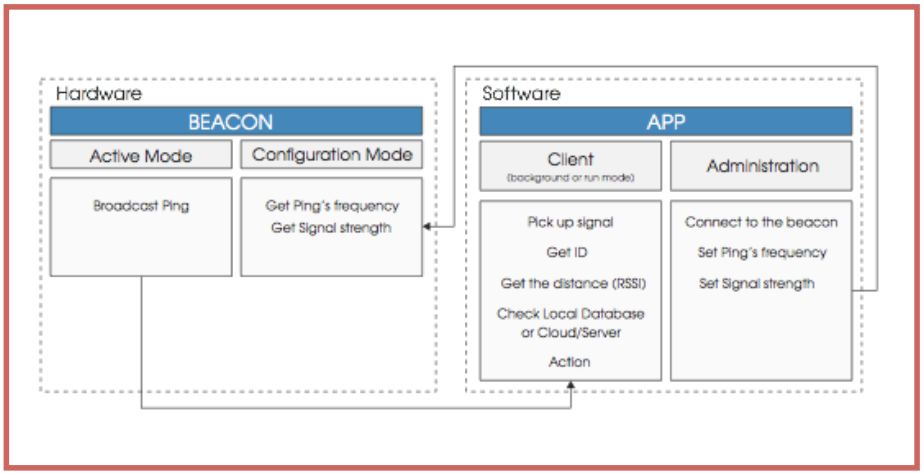
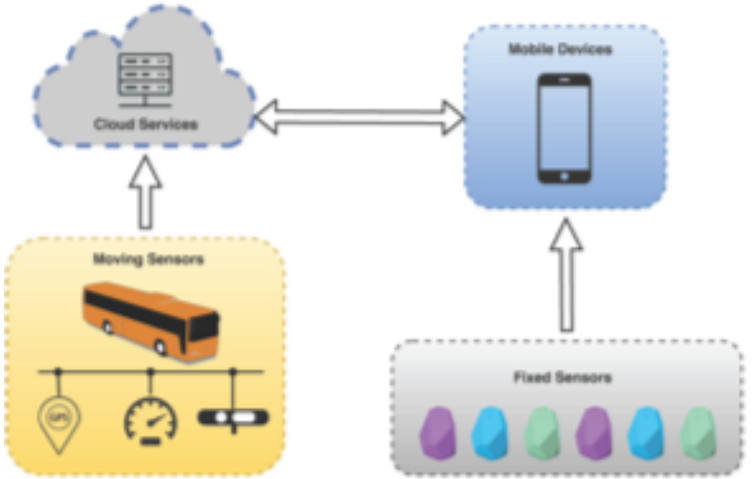
Geo-localization of human movements at mass events: SHARPER





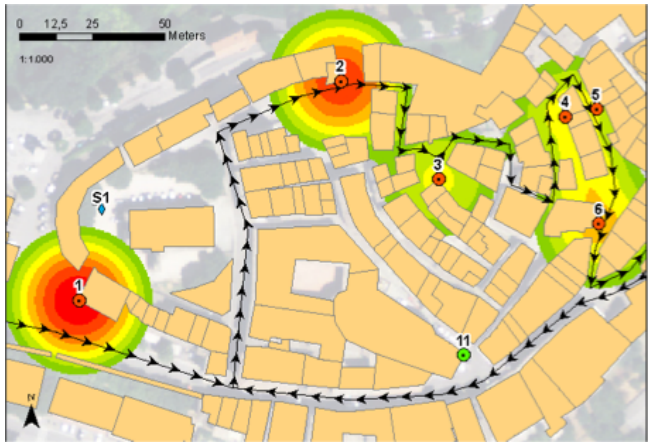


Geo-localization of human movements at mass events: SHARPER

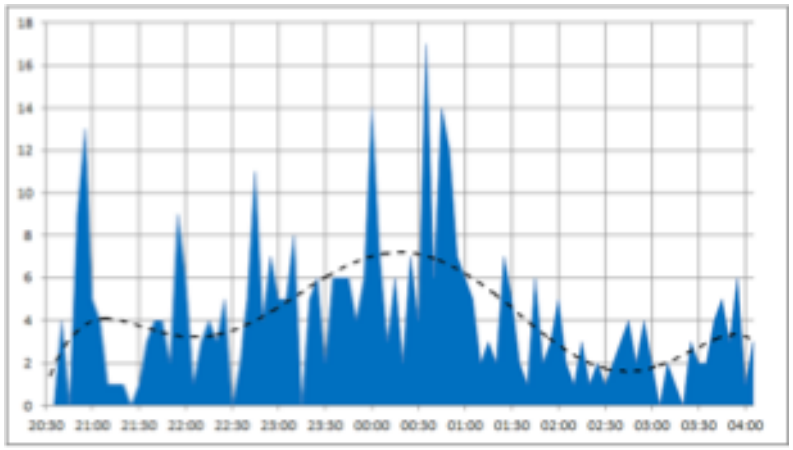
Data collection

Beacon	Number	Min	Avg	Max
1	30	00:24	09:20	57:28
2	26	00:31	03:23	33:56
3	14	00:33	01:18	02:37
4	12	00:41	02:34	16:35
5	4	00:31	01:53	04:30
6	18	00:11	10:34	45:25
Total	104	00:11	05:55	57:28

Data visualization



Data Analysis



The use of BLE beacons for:

- Providing information to the users in real time
- Providing users with contextual information about the events
- Collecting digital footprints
- Gamification

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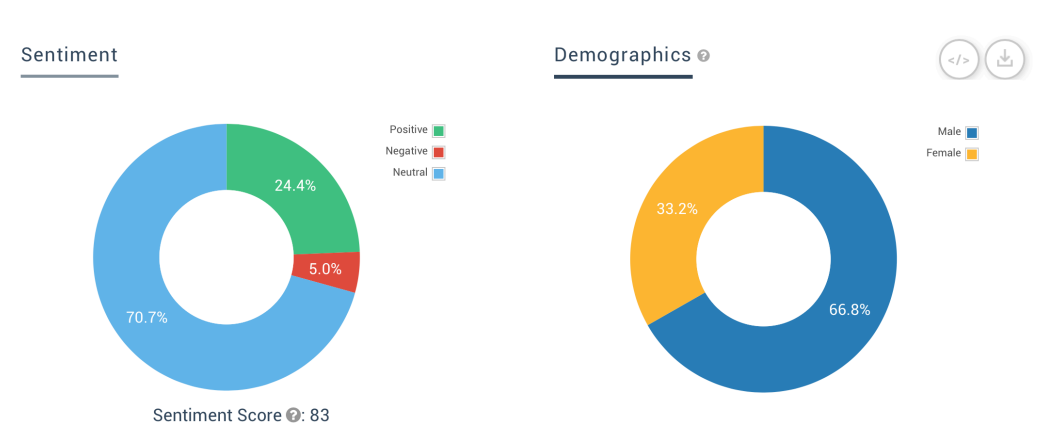
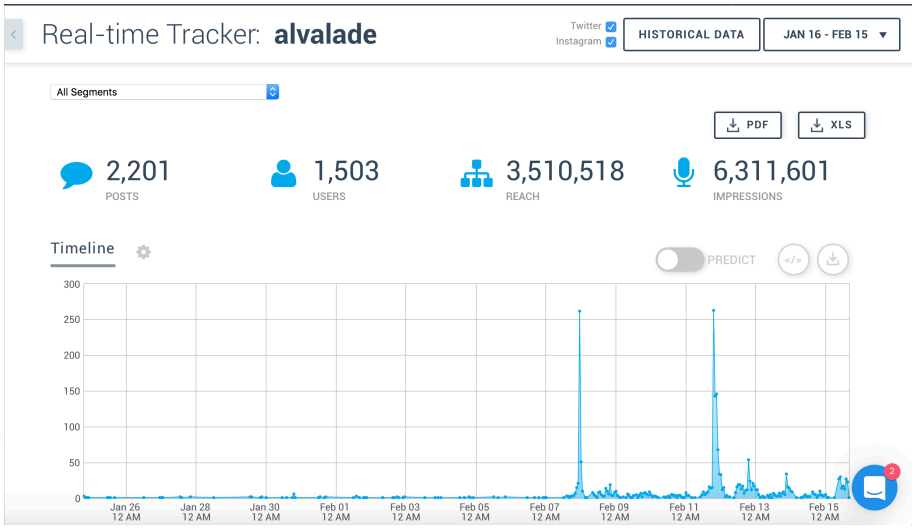
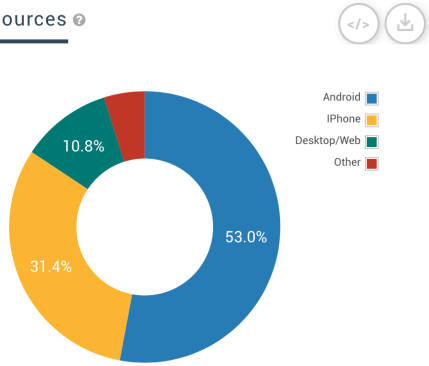
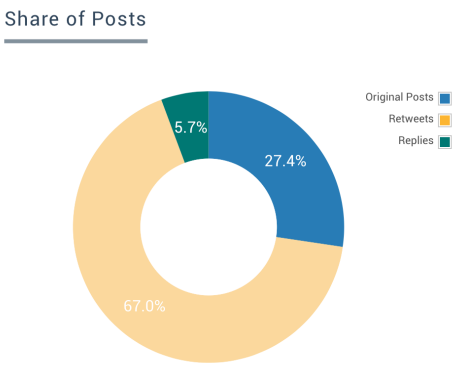
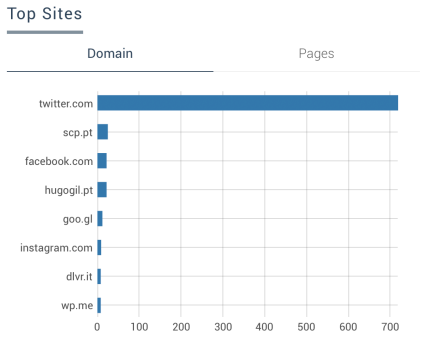
Geo-localization of human movements at mass events: SHARPER

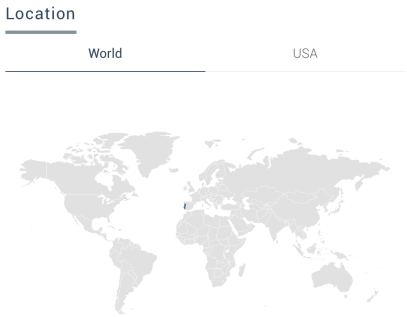












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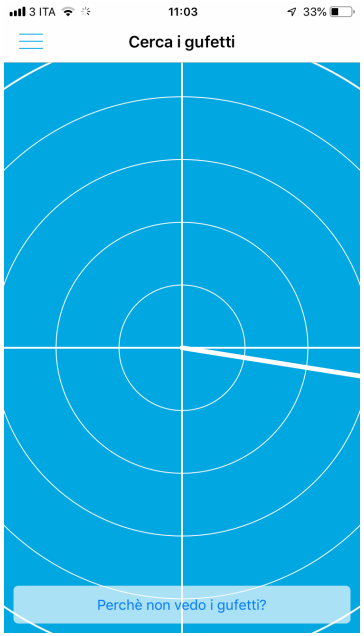

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WHAT'S THE POINT OF BEING AFRAID
OF THE ZOMBIE APOCALYPSE
WHEN YOU'RE ALREADY A ZOMBIE?

The relationship between ICT and Public Open Spaces

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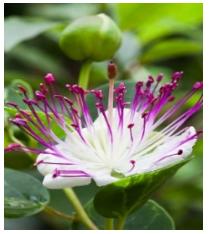
The relationship between ICT and Public Open Spaces













Cardeto Park area

S = 35 hectares

Investigated area

N

UAB Universitat Autònoma de Barcelona

Universidad de Deusto
University of Deusto
Deusto

UNIVERSITÀ POLITECNICA DELLE MARCHE

CIRP Centro di Ricerca e Servizio sul Paesaggio

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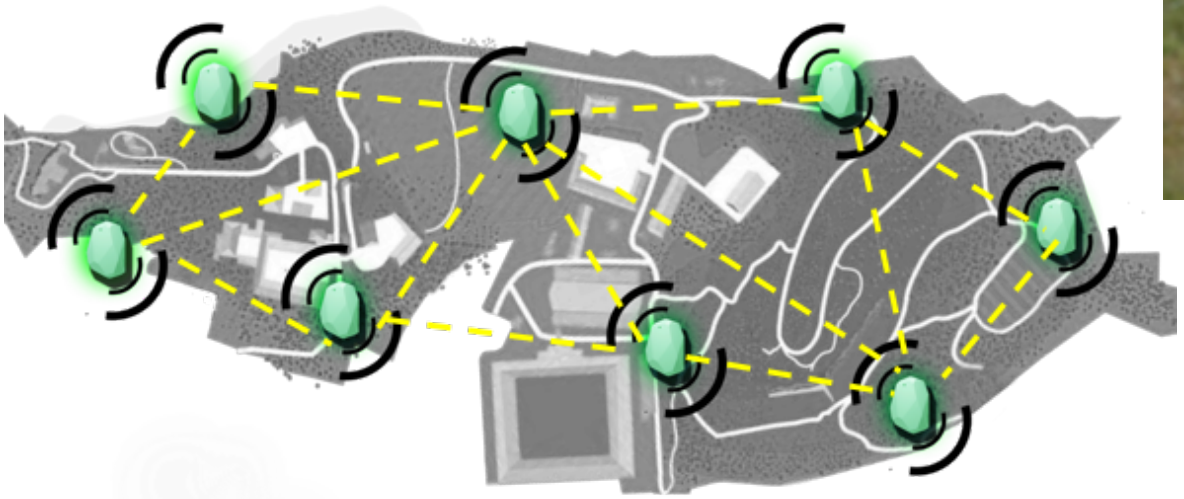
The relationship between ICT and Public Open Spaces

USING BLUETOOTH LOW ENERGY (BLE) TECHNOLOGY

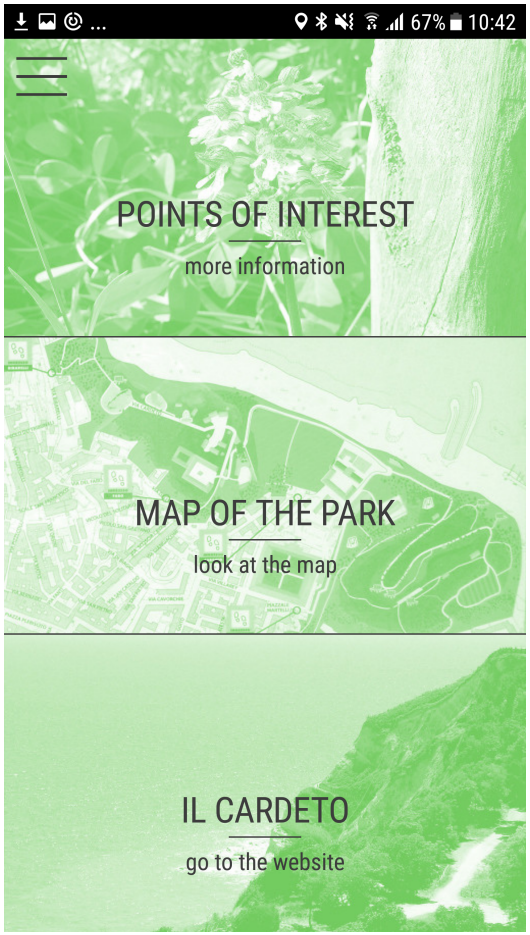
- Providing contextual information to the visitors
- Attracting the visitors to the main POIs of the park to discover them
- Get statistics from the users
- Get the feedback from the users

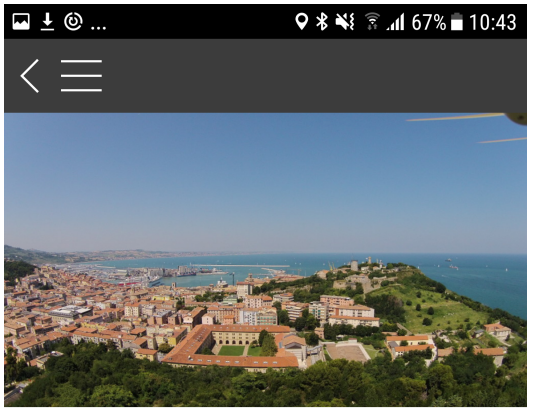


Beacons installed within the park

Active beacon pairing with mobile devices

The relationship between ICT and Public Open Spaces





Introduction

The Cardeto Park is located on the top of Capuccini and Cardeto's hills, close to the historical city centre of Ancona. It is the largest park in the city, with an area of about 35 ha. The Park was open in 2005, after after being loudly claimed by the citizens for almost 30 years; it is now a rich and complex ecosystem of environmental, natural, landscape, historical and cultural importance.

YOUR RATING:

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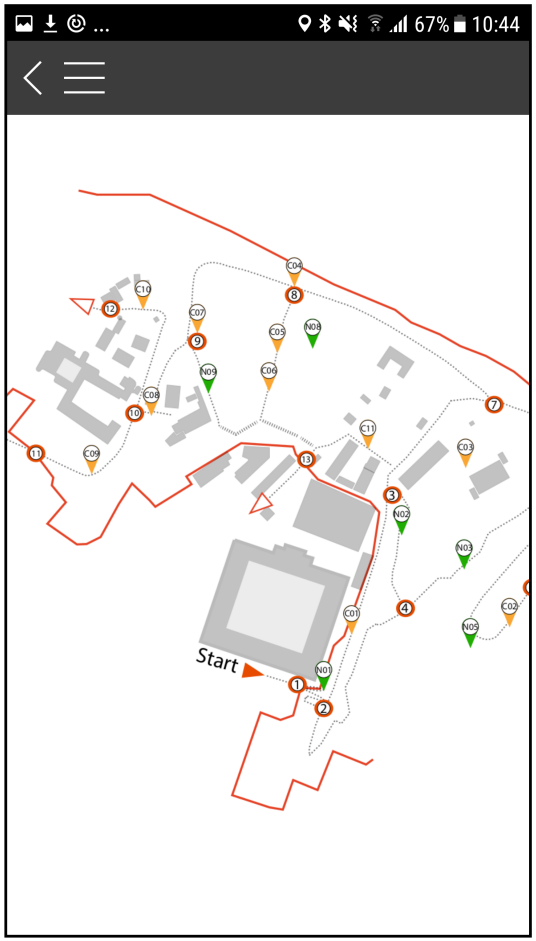
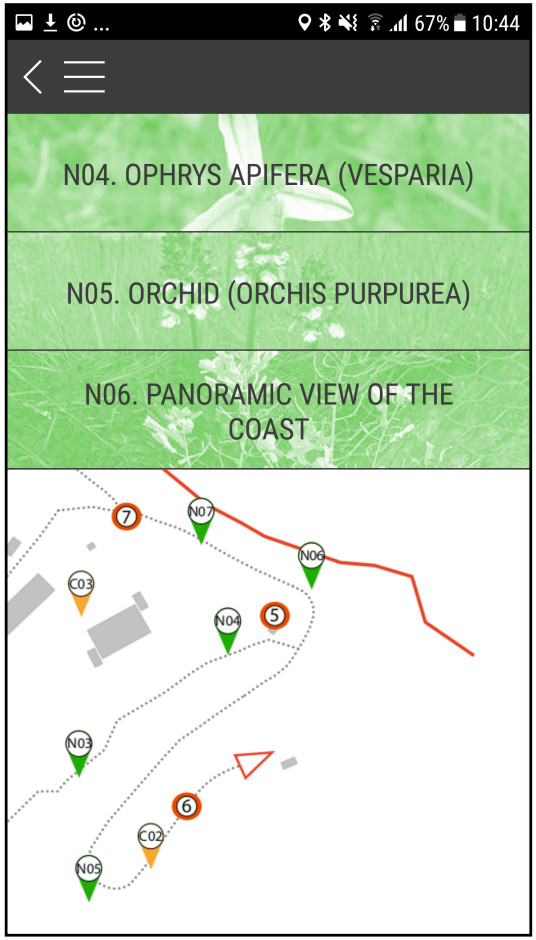
The relationship between ICT and Public Open Spaces

INTERACTIVE MAP



PATH SUGGESTION



- Contextual awareness for the users
- In depth analysis of specific areas
- Personalized path
- Notification
- Users Feedback

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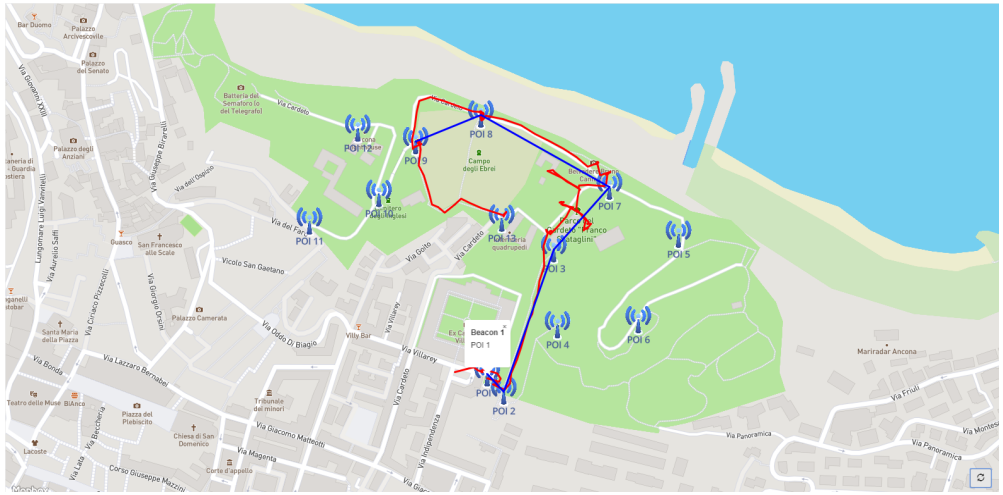
The relationship between ICT and Public Open Spaces



BEACON DATA

Device ID: 035C435D-ADAA-4ABD-8190-727238CE7DDB

Beacon	Visit Time	Number of Vis
#1: POI 1	00:11:43.0	1
#2: POI 2	00:02:25.0	1
#3: POI 3	00:01:05.0	1
#4: POI 4	00:00:00.0	0
#5: POI 5	00:00:00.0	0
#6: POI 6	00:00:00.0	0
#7: POI 7	00:02:45.0	1
#8: POI 8	00:13:03.0	1
#9: POI 9	00:05:23.0	1
#10: POI 10	00:00:00.0	0
#11: POI 11	00:00:00.0	0
#12: POI 12	00:00:00.0	0
#13: POI 13	00:00:00.0	0

GPS DATA

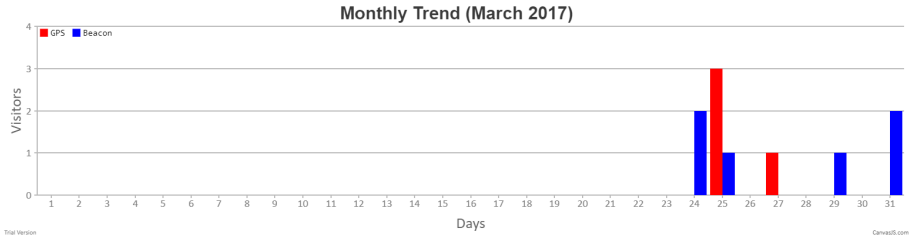
Device ID: 035C435D-ADAA-4ABD-8190-727238CE7DDB

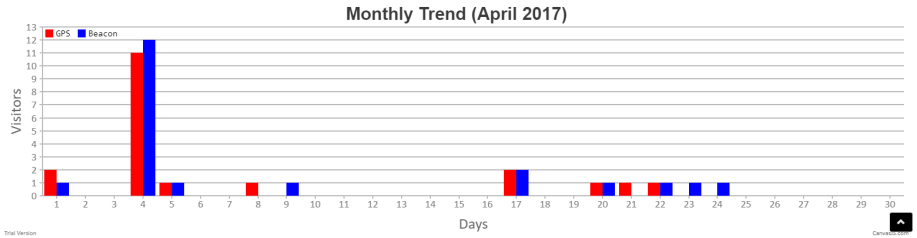
Beacon	Visit Time	Number of Visits
#1: POI 1	00:12:01.0	2
#2: POI 2	00:00:42.0	2
#3: POI 3	00:00:00.0	1
#4: POI 4	00:00:00.0	0
#5: POI 5	00:00:00.0	0
#6: POI 6	00:00:00.0	0
#7: POI 7	00:00:44.0	1
#8: POI 8	00:12:50.0	1
#9: POI 9	00:05:16.0	1
#10: POI 10	00:00:00.0	0
#11: POI 11	00:00:00.0	0
#12: POI 12	00:00:00.0	0
#13: POI 13	00:01:04.0	1

Beacon's Statistics

Close

Beacon 7 POI 7 2017





The purpose of the visualization tool is to create an extended application including both GPS and Bluetooth beacons data that:

- shows tracking paths (of both GPS and beacons) of various visitors and the differences between them;
- shows statistics related to a single visitor;
- shows statistics related to a single POI;
- allows to upload new datasets of multiple locations.

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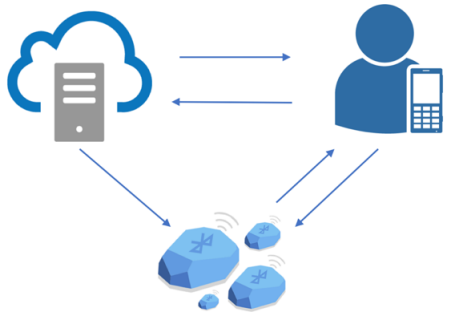
The relationship between ICT and Public Open Spaces


SPENCER PLATT/GETTY IMAGES

ROCCA DI GRADARA

A museum as a senseable space



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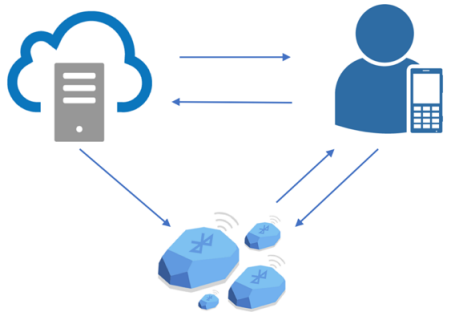

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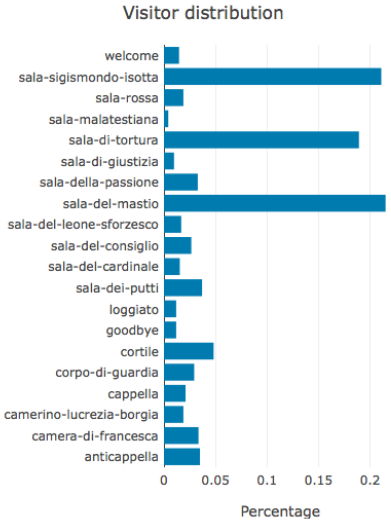

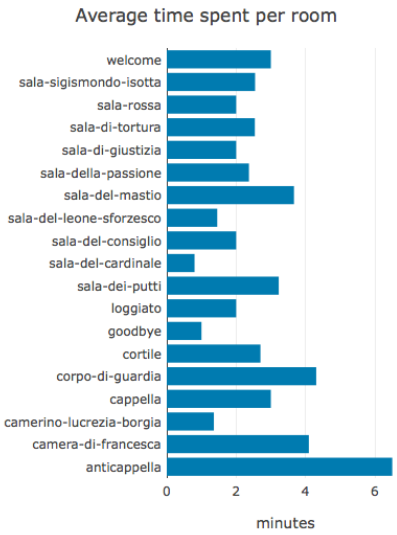

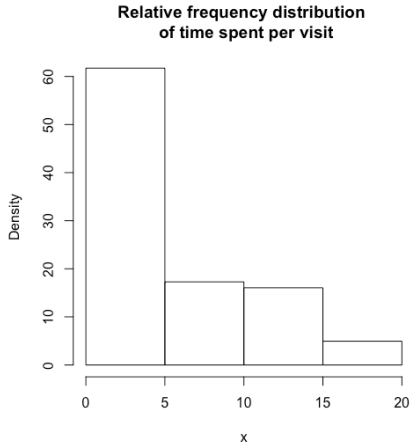

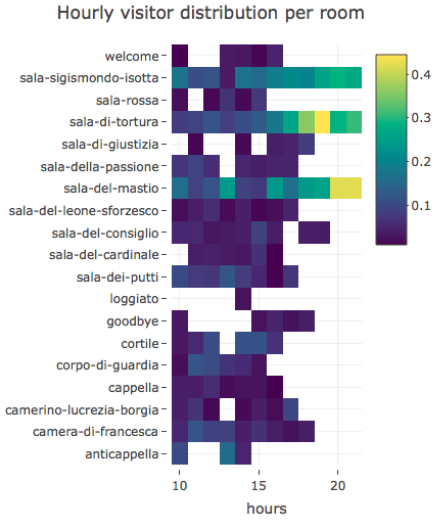

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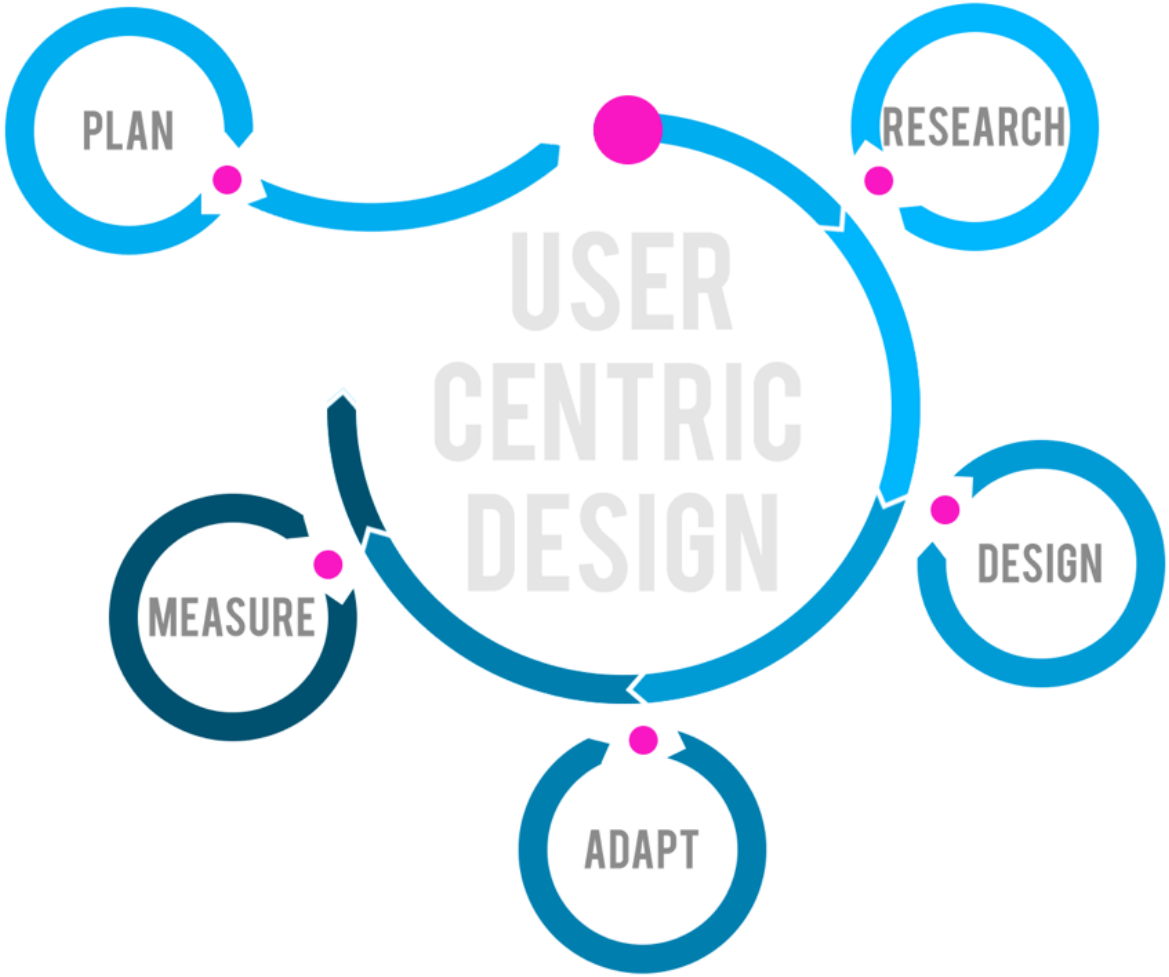
GAP GEOMATICS APPLICATIONS& PROCESSING
VRAI



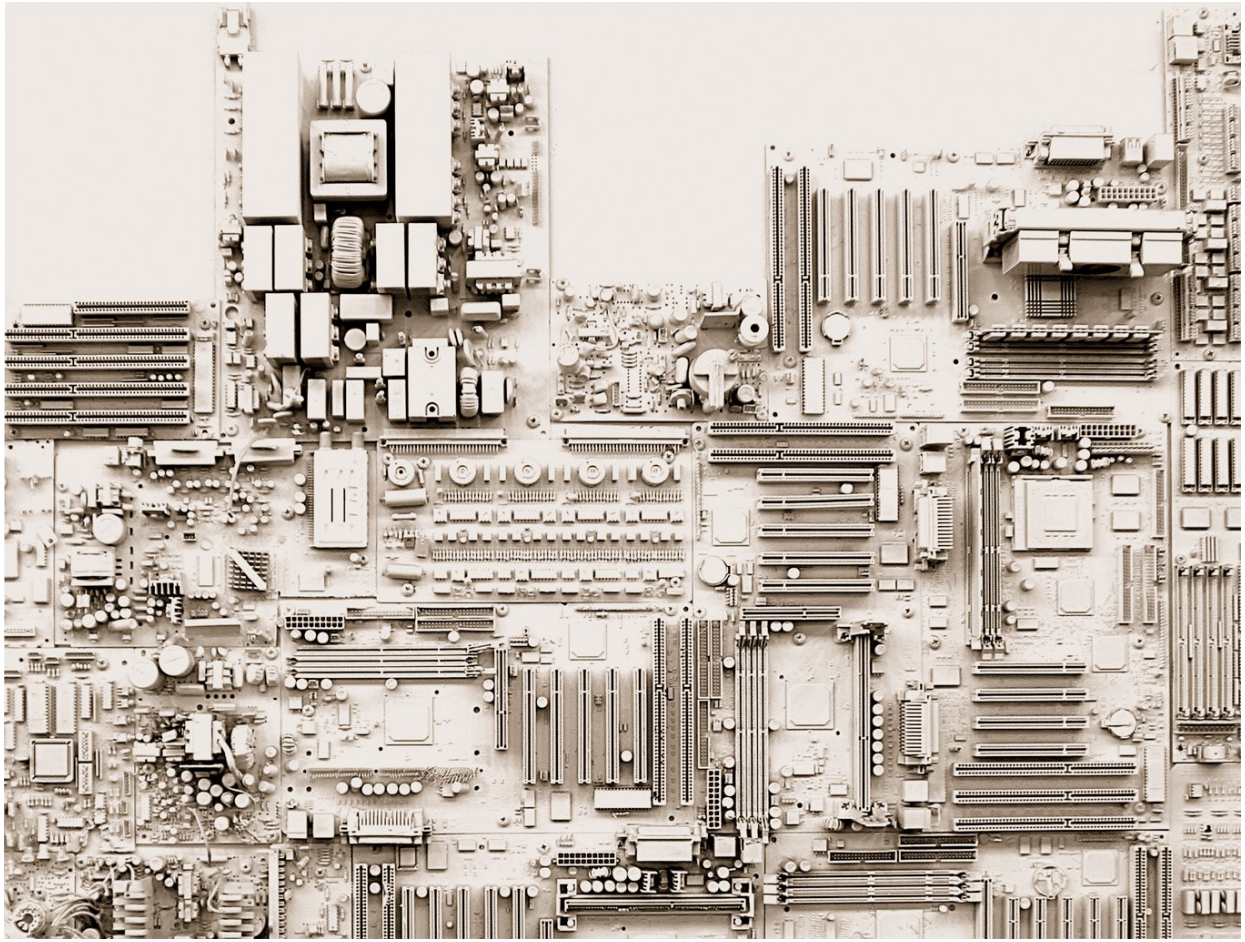
USER CENTERED DESIGN

+

DATA DRIVEN DESIGN

A CITY IS NOT A COMPUTER

City-making is always, simultaneously, an enactment of city-knowing – which cannot be reduced to computation.



https://goo.gl/52duRS

TECHNOLOGY IS THE ANSWER BUT, WHAT WAS THE QUESTION ?

Study Tracking Individual Ants Reveals They Change Jobs with Age

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Grazie

Roberto Pierdicca, Eva Savina Malinverni, Paolo Clini, Emanuele Frontoni, Ramona Quattrini

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