

CASE STUDY – CITY OF ZARAGOZA

“Periscope”

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1. Background and concept

The Periscope is a prototype of a scheme for sharing the information contained in urban data (public and private) held among agents involved in what we call "city making". Through the Periscope, we hope that the potential contained in these data will be translated into the creation of social, scientific, cultural, economic and democratic value, by involving citizens through co-creation with the purpose of designing better urban services.

The original idea for “*The Periscope*” was developed from an academic paper¹ in 2015 for the Master in City Sciences at the Universidad Politécnica de Madrid. Periscope is an initiative connected to the notion of the Institute of Digital Urban Design that the Zaragoza Committee of Experts recommended as one of the functional areas of *Etopia*, Zaragoza City Council's Art and Technology Centre².

2. Goals of the project

Periscope aims to decipher the urban flows in mobility, energy, economy for a better understanding of that formidable invention of humanity that are cities (in this case, our city, Zaragoza) and to connect that knowledge with the citizen, artistic, innovative and scientific fabric of our city.

Periscope seeks to do this using the organizational tools, connections and spaces that are available to us. To do this Etopia is playing the role of interface or "connector" of all the areas that can contribute to and benefit from the value created: university, municipal services, start-ups, artistic communities, etc.

For instance, “Etopia” runs the annual open challenge on mobility data “Ojo Al Dato”, where teams can propose solutions based on the data from the Periscope. “Ojo Al Dato” is powered through collaboration with partners such as Ibercaja Foundation (Ibercaja is the region’s main bank) and the Metropolitan Transport Consortium (CTAZ). Also, “Etopia” partners with design and art academic institutions to run programs of data visualization on the 600 sqm LED digital façade. These data visualizations are seen from a distance of 1 km, allowing citizens to be aware of hidden aspects of their city that data reveal. The classrooms of Etopia also host specific training programs on data analysis, literacy or visualization.

¹ <http://www.citysciences.com/en/portfolio/final-thesis/daniel-sarasa>

² <https://www.zaragoza.es/ciudad/etopia/>

3. Work done

Minimum viable product for the 1st Mobility Visualization Hackathon (September 2018)

Periscope Minimum Viable Product was developed for this event, in which during 10 hours of uninterrupted work, programmers and visual artists produced an audiovisual content (video) for a better understanding of mobility by citizens, based on the data corresponding to the Citizen Card, the Interbus Card and the BiZi service. The attendees were given a brief overview of how the data available to them (Citizen Card, Interbus Card and BiZi Zaragoza) was structured and were assisted by technicians from the BiFi³ of the University of Zaragoza and experts in audio-visual creation.

To democratize a knowledge that is usually only available for a few internal managers or technicians, make it relevant and understandable to citizens, we made available to visual creators 5 years of data on urban, interurban and cycling mobility with the goals of transforming data into information; defining the data in a graphic way so that the information they contain reaches us better, is more understandable and gives rise to new questions about urban life; expanding knowledge, by improving and adapting the service according to the needs and results proposed by the resulting display; encouraging teamwork and a participatory culture, facing a real challenge of design and creativity of urban data visualization and generating a local community interested in the visualization of urban data from creative way.



Data visualization on how the young people of Zaragoza move around on public transport during the week, 24 hours a day.

3 <https://www.bifi.es/es/>



Data visualizations on the LED facade of Etopia, by the local artist Néstor Lizalde

Open Challenge "Ojo Al Dato" ("Watch the data") about Periscope data, includes a training program in data processing and visualization (October 2019)

A data visualization technology program was conducted to enable teams to get the most out of new data visualization technology tools. Through the API of anonymisation Periscope, the attendees were able to access 1 year of data related to urban mobility (tram, bus, BiZi, metropolitan lines). In addition, they had access to valuable new data sets (dataset corresponds to one year of anonymized and aggregated financial transactions in shops and ATMs from a private partner) to unravel behaviours, understand movements and visualize situations and that will surely shed new light on urban dynamics. By accessing the Labs of Etopia some attendees were able to choose to develop physical prototypes of solutions instead of visualizations (e.g. a new type of scooter, the canopy of the future, wearables).

4. Digital rights issues

In the Periscope we can find some obstacles that may affect the digital rights of the citizens due to a loss of privacy. To minimize any impact on citizens' digital rights, Periscope wants to guarantee citizens' privacy. We are conscious that, from the moment than our information is stored a database, full anonymity does not exist anymore. This is why we have experimented with a strategy to preserve privacy based on the concept of "Differential Privacy". Besides data anonymization, we introduce random noise in individual data, in a way that the system responds with inaccurate data when it's queried about single records, but unloads overall true information when queried on aggregate data. This can help to overcome the barriers of privacy, while preserving a certain correlation between data stored in different datasets.

The API is published and documented in Git Hub, and is therefore open to public scrutiny and improvements.

5. Lessons learnt and next steps

On the first two editions of “Ojo al Dato” some promising achievements have been made. In the 2018 edition, we were able to unveil interesting visualizations of urban mobility services:

- “The pulse of the Ciclyst City”, a heat map of most affluent bike stations in the city. <https://openurbanlab.com/2018/10/11/el-pulso-de-la-ciudad-ciclista/>
- “Ciclo-paths” on origins and destinies of bike rides. <https://openurbanlab.com/2018/10/30/el-periscopio-ciclotrayectos/>
- “The pulse of public transit in Zaragoza”, about the load of public transport and how millennials use bus and light rail on weekends vs. labour days. <https://openurbanlab.com/2018/11/16/el-periscopio-el-pulso-del-transporte-publico-en-zaragoza/>

In the 2019 edition, the focus was made on operational tools that allow public officials and citizens to gather new insights on the possible design of new services and places. The projects have not yet been made public due to the suspension of the awards ceremony due to Covid-19.

It is precisely the crisis post-covid-19 that unexpectedly opens up new windows to pursue some of the actions outlined in these two years of the Periscope. On one hand, it exists a growing sentiment that measures of social distancing will only be effective if they are a collaborative effort, not imposed top-down. In this sense, raising awareness amongst citizens of good practices and measures through compelling data visualizations will be key for future outbursts.

But also, the Periscope can make a contribution to the debate between the need to combine the protection of two fundamental rights such as collective health and individual privacy, exploring practical ways to implement some of the guidelines for public use of individual data that new frameworks (such as the Eurocities’ Citizen Data Principles) suggest.

6. Conclusion

As a conclusion, we reckon that this is just the beginning of a promising path. We just established the basics (partnerships, raw data sets, enhanced anonymisation mechanisms, and incentives) of a system that could be further developed in the future. A future in which data will play a prominent role in creating value for our urban societies, but a future also where inclusion, data literacy and privacy should stay on the top of the priority list.

The Periscope needs new infrastructures, new data sets, real time pipelining and a governance model to be scaled up and effectively contribute to the progress of our city, Zaragoza.