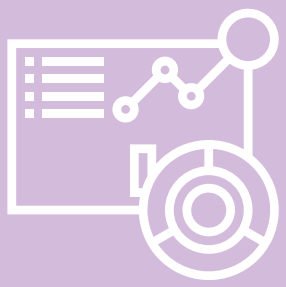

Blueprint for #CitSciComm with and for science journalists

NEWSERA
#CITSCI IS THE NEW #SCICOMM

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Michele Catanzaro, Antonio Massariolo

Layout
Dario Valeri

Project Details

Acronym	Title	Grant agreement
NEWSERA	Citizen Science as the new paradigm for Science Communication	873125

Topic	Duration	Website
SwafS-19-2018-2019-2020. Taking stock and re-examining the role of science communication	January 1st 2020 - March 31st 2023 (39 months)	**https://newsera2020.eu/**

Foreword

Towards a citizen science journalism

Citizen science and science journalism have a lot to gain from each other. Citizen science projects can put their topic on the public agenda by getting exposure in the media. They also obtain direct benefits, like enrolling new citizen scientists and motivating those already participating in the projects. Journalists help citizen scientists to focus on aspects of their projects that are more newsworthy and relevant to the broader society rather than sticking only to abstract scientific issues.

On the other hand, when the media gets interested in a citizen science project, they sometimes access a trove of original data and stories that are much harder to find when covering professional research: citizen science naturally provides a living, personal outlook on scientific contents. Beyond that, citizen science allows journalists to engage with the community – something increasingly important and often lacking in mainstream journalism.

The most common interactions between journalism and citizen science consist of the media covering projects that pose interesting questions, yield relevant discoveries or applications, or involve compelling processes or attractive profiles of participants.

However, the interaction could be much more intense than that. Citizen journalism, often helped by digital platforms that allow it to scale to relevant sizes, is one of the exciting trends in current journalism. Its participatory component is naturally coincident with that of citizen science.

So, why not try citizen science journalism? Bringing together a journalistic question on a scientific topic of social relevance that may be answered with a citizen participatory process would provide a new and different way of doing science journalism and citizen science – one based on actual, deep engagement.

The idea is attractive, and there are examples here and there that go in this direction. However, it also poses many challenges in bringing together different stakeholders (journalists, citizens, scientists, funders), each with its own ethos and priorities.

The couplings between journalists and citizen science projects carried out by the NEWSERA project have been a significant step towards dealing with these issues practically and constructively. The seeds planted by NEWSERA will likely yield fruits well beyond the end of the project

Michele Catanzaro, PhD, science journalist and lecturer

Clarity and dialogue: two essential ingredients in the collaboration among journalists and citizen scientists

Doing journalism, among other things, means constantly keeping your eyes open to everything around you. Investigative journalism, in particular, consists of trying to understand a specific event or phenomenon using as many sources as possible.

However, no journalist can have the gift of ubiquity, so one of the little secrets of those who want to do this job well is to have a great address book column. An address book that comprises people directly involved in events and people who can monitor these events. Here we are talking about a particular case, investigative journalism, but the underlying principle can also be extended to journalism in general.

An excellent intuition of the Newsera project was precisely translating this practice into science and science journalism. Combining citizen science with those who professionally try to popularise science is a fundamental building block for laying a concrete foundation to bring science to as many people as possible. With projects such as Newsera, information becomes circular. It starts from the citizen and returns to the citizen, but only after being united, analysed and completed. I.e., it returns in a more detailed and knowledgeable manner to make the citizen both a participant and a loyal follower.

In an age where attracting attention is increasingly difficult because such attention is increasingly volatile and short-lived, building people's loyalty is one of the few ways to have a solid base to rely on. When the citizen side sees that its efforts are repaid with high participation, good usability of the tools, which thus turn the monitoring itself almost into a gamification of science, and above all punctual and punctilious journalistic analysis, it will undoubtedly be more willing to participate in the project.

The pleasant experience I had with the InNat project made me realise that there are two fundamental aspects of projects that combine citizen science and data journalism: clarity and dialogue. The journalist or communication professional needs to be clear about the project's objective, but above all, what data reported by citizens can be used. On the scientists' side, on the other hand, there must be clarity regarding both the methodology of data collection and the usability of the data. Combining citizen science and data journalism sounds like a complex undertaking, but it is not because the ethical principles underlying both professions are often quite similar. The collaboration with Alessandro Campanaro and his research group at InNat was undoubtedly positive in all respects. It comprised constructive dialogue and a sharing of all the steps, always respecting their respective roles.

Antonio Massariolo, data investigative journalist

*I always say that **doing Citizen Science is not an easy task**. You need knowledge, expertise, time and resources, and interdisciplinarity is key. As a Chemical Engineer expert in odour pollution, when I first had the idea of using citizen science for its monitoring I thought "I just need an App. Citizens have the best sensor, their own noses. I just need to provide them with a tool to collect their odour perceptions". And that's how OdourCollect was born. But I soon realised that the most important thing in a citizen science project is to achieve the engagement of communities. You can have the best App in the world, but without engaged citizens, you have nothing. In fact, a piece of paper is more than enough for data collection (and you better shall consider this as an alternative if you want to be inclusive).*

Then I started to realise more things. One of the main objectives of the D-NOSES Project was to advocate for a common policy framework to protect European citizens suffering odour pollution, since it is an under regulated issue and the second cause of environmental complaints after noise. But how can we researchers reach policy makers? Which is the right governance level? Our answer was the development of a multi-level governance model that allowed multi-level engagement of European, national and local decision makers. Not an easy task either.

*And what about industries? Would they be comfortable with an open data model which will point out the potential origin of odour emissions? Would they be willing to trust citizen generated data to identify the situations of maximum impact for their neighbours and act upon them? And what about fellow scientists? Would they rely on a new odour monitoring methodology? Would they trust the produced data sets? All **quadruple helix stakeholders** are part of the problem and also part of the solution, but they **have different interests, agendas, priorities and timings**, meaning that **communication is key** to engaging them all in the process. **And this was how NEWSERA was born**.*

*NEWSERA has been working with **39 Citizen Science projects in Spain, Italy and Portugal** for the last three years, co-creating innovative Science Communication strategies to effectively reach quadruple helix stakeholders through our **#CitSciComm Labs**, while developing a useful and replicable **impact evaluation framework**. We have identified a common lack of knowledge in science communication and a lack of resources (I was not alone, our pilots have not been alone anymore), and the NEWSERA team has been naturally evolving towards a mentoring role with the pilots. Specific training has also been offered within the Labs once the need for capacity building was made evident. We have been researching recognition of the practice as part of the solution, something that both Science Communication and Citizen Science share as scientific disciplines, and that we hope will eventually change in the years to come - specially because of the push that the European Commission is giving to public engagement and co-creation in all Clusters and Missions of Horizon Europe, and because we need an active and more informed society to deal with global crisis such as the COVID-19 pandemic or the climate emergency. In addition, we have been exploring two new concepts: **Citizen Science Communication** (including how citizen scientists become science communicators themselves using their own means*

*and channels when actively involved in science) and **Citizen Science Journalism** (as citizen generated data have a huge potential to produce newsable stories of societal relevance, and data journalism tools can help).*
*To compile the main project findings, the NEWSERA team has produced **five blueprints**, one addressed to each one of the stakeholders from the quadruple helix (citizens, academic scientists, the public sector, and industries and SMEs) and one addressed to data journalists, for any citizen science project that has the need (as we had) to reach any of their target audiences for a more effective engagement, and consequently, an increased impact. We hope that our results will be useful for building capacity in Science Communication within the Citizen Science community and beyond, to be able to engage more and more European citizens in science for a better future for all, to produce evidence-informed policies aligned with society, to increase academic recognition and trust of both disciplines, and to engage more industries and SMEs and produce new business models that will contribute to the sustainability and mainstreaming of the practice. You are not alone anymore. We are a community with a common need and we hope that this blueprint will help you shed light in your way.*

Rosa Arias
NEWSERA Project Coordinator

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Target Audience

This blueprint is addressed for the following target audiences:

- science journalists
- data journalists
- press officers
- communication officers
- scientists and researchers involved in communication and dissemination

Summary

NEWSERA Blueprints for citizen science communication (#citscicomm) with and for quadruple helix stakeholders (citizens and society at large, academic scientists, public sector and policymakers, industry and SMES) and science and data journalists is an instrument that can serve a general audience, including those who are planning to start a citizen science (CS) project, those who want to improve and/or rethink their communication strategies in order to increase specific target audiences, or those who want to enlarge their scope of action by involving the different actors of the quadruple helix model and the media.

The road for CS projects establishment and sustainability is long and there are many barriers to be faced. But you are not alone!

The road for CS projects establishment and sustainability is long and there are many barriers to be faced. But you are not alone!

Together with 39 CS projects from Italy, Spain and Portugal, the NEWSERA Pilots, we have tested the NEWSERA methodology for the co-design, implementation, iterative assessment and validation of communication strategies directed to each of the quadruple helix stakeholders and science and data journalists. This was performed through our #CitSciComm Labs, dedicated to each individual stakeholder, consisting of three rounds of workshops, replicated in each of the participating countries, throughout three years.

In this series of five blueprints, NEWSERA brings the learnings of this co-created process together with our pilots, invited stakeholders and science communication experts (NEWSERA Sounding Board) that was complemented with mentoring, capacity building and networking sessions, generating knowledge, recommendations and useful resources.

In this blueprint, dedicated to **science and data journalists as stakeholders**, you will find, more in depth, indications and reflections on the importance of addressing and engaging with journalists. A case is made about the possibility of adopting and developing the concept and practice of citizen science data journalism, involving experts of communications from the early phases of your project. Insights are also shared on the importance and significance of relating to media and journalists in more advanced steps of your project if you prefer to pitch them and choose different formats and ways to bring your results to a range of audiences.

Finally, we share a series of recommendations to efficiently engage with science and data journalists from the early phases of your project for a broader impact and ensure replicability of the NEWSERA findings and science communication strategies in citizen science projects and beyond.

Introduction

Citizen science (CS) initiatives are changing the paradigm of science communication. Not only the embedded bottom-up methodology considers people's questions and needs, aligning science and society interests, but also allows citizens and other key stakeholders to become data generators and, as such, to become themselves the source of scientific news. Non-experts participation in CS projects also implies the potential to strengthen science literacy and, for these reasons, opening science and innovation to society.

To fulfil these potentials and to achieve societal impact, CS initiatives may face different challenges. Effectiveness and long-term sustainability of a CS project requires the creation and maintenance of a complex ecosystem, in which the participation of quadruple helix stakeholders (citizens and society at large, academic scientists, public sector and policymakers, industry and SMES) (Carayannis *et al.*, 2009) is crucial. When we consider challenges in terms of science communication we can name: using a wide variety of specific communication tools and strategies for each target group, including digital, traditional and face to face activities to increase participation, providing the required continuous feedback to each stakeholder group to maintain engagement throughout project execution, and involving all stakeholders in every phase of the research. Another often neglected aspect is related to internal communication.

Interdisciplinarity, another intrinsic characteristic of CS projects, is also a challenge, and communication among the different disciplines involved can be a key asset for mutual understanding and collaboration. Science and data journalists also play a key role in mainstreaming CS processes and results, and at the same time raising new questions that can shine a light on critical issues, gaps, and potential biases. Ultimately this can increase trust among the whole range of stakeholders and open new opportunities to contribute to public knowledge. All these challenges might be considered also on the other way round: CS can benefit from communication but CS can bring fresh new perspectives for improving science communication.

In NEWSERA, we conducted an analysis of the communication tools and strategies used by 157 CS initiatives, across the European Union (EU), United Kingdom (UK), and Switzerland (Giardullo *et al.*, 2023) portraying the state of the art of CS projects' communication strategies. We found out that most projects still see communication as a dissemination activity, to serve educational purposes rather than exploring it as a tool to involve other potential target audiences, such as those from the quadruple helix model. Moreover, most CS projects, regardless of their stage, keep the potential level of engagement quite low, with citizen scientists' main contribution as data collectors. The lack of strategies with defined target audiences seem to present a repurposed top-down, one-to-many, unidirectional and oriented to a knowledge transfer science communication style, which clearly undermines the very own potential of CS.

Through its #CitSciComm Labs methodology (Magalhães *et al.*, 2022), NEWSERA has analysed and evaluated the complex and multidirectional communication strategies, addressed to each of

the quadruple helix stakeholders, and science and data journalists. The activities involved 39 CS projects from three Southern European countries (Italy, Spain and Portugal), the NEWSERA Pilots, for elaborating a new paradigm for science communication. Using a bottom-up approach, innovative strategies have been co-designed, implemented and validated to overcome barriers identified for each stakeholder group, in order to improve the science communication strategies of NEWSERA pilots' and, in turn, the impact of the projects themselves, contributing to the mainstreaming of citizen science.

Through the five blueprints, NEWSERA will share the knowledge, resources and recommendations obtained in the #CitSciComm Labs targeting each of the quadruple helix stakeholders, and science and data journalists.

TARGET STAKEHOLDER: SCIENCE AND DATA JOURNALISTS

What do we want to achieve?
Increase the ability to create a relationship of trust and mutual benefit between the citizen science projects and the journalists, be they generalists, science or data journalists. Increase the understanding of the value of the CS projects among the media, and in particular among the data journalists, who might discover the importance, relevance and significance of having access to original data and information collected and analysed by citizens committed to a specific project of public interest.

What are the challenges?
Journalists need stories that are newsworthy - the concept of 'news' being elusive for most of the CS projects and they can only use data and stories in certain formats. There is very little comprehension of the practices, rules and time constraints that regulate journalistic work outside the media domain. At the same time, media and journalists have very little understanding of CS projects and tend to classify them as divertissement or as an amateur activity, not fully trusting their findings, methodology and generated data.

Who are the targets?
Journalists, both generalistic and specialised, in particular science and data journalists. Press and communication officers of the research institutions involved in the CS projects. Science communicators and media practitioners at large.

How did we do it?
To address these challenges, the #CitSciComm Lab for and with science journalists was established as a cross-cutting Lab and thus collaborated with all 39 NEWSERA pilot CS projects. These consisted of a specific set of Labs to bring together the NEWSERA Pilots and data and science journalists taking into account their diversity in different characteristics, for example, the maturity of the CS project, their level of participants engagement. After an initial round of Labs, where co-creation was undertaken to build a common ground where needs and expectations were shared among CS projects and science and data journalists, a series of other activities were implemented to produce outputs to be used as examples and case studies to other projects and journalists. A public event and a final round was organised in collaboration with NEWSERA SwafS-19 sister project ENJOI, encouraging communities of practice to gather. This Blueprint is based on the insights gained from these collaborations

Good practices to engage with science and data journalists

1.

Why collaboration among CS projects and science and data journalists can be useful

Through three rounds of Labs, animated by training sessions and a series of interactive co-creation efforts, the NEWSERA Pilots and a selected group of science and data journalists defined their respective needs and expectations, as well as the assets and the contributions they can provide to build a common effort to improve the communication, through the media, of the CS projects.

CS projects can contribute to the generation of original datasets, focused on a range of diverse topics that can be of high public interest. However, CS-generated data often remain confined to the domain of science and scientific publications, rarely reaching a broader public. A side effect is the lack of recognition and reward for their contributions affecting their long-term engagement and retention (Luís *et al.*, 2023).

CS-generated data can come to life, enter a shared narrative, and prove to be of public interest when an experienced science and data journalist can contribute to the design, development and publication of an effective and engaging communication product. However, to reach this goal, a fruitful, respectful and productive collaboration between scientists, citizens and journalists, has to be properly managed.

Data journalism can be particularly useful when applied to issues of high public interest but yet particularly difficult to interpret and understand, such as health or environmental ones. Using data and data visualisations to build stories has proven to be a very effective strategy to produce fact-based, reliable, verifiable and thus trustworthy information to the audiences. The practice of data journalism has developed in such a way that the stories are often complemented by a specific methodology, explaining to readers and listeners how the data have been collected and treated before entering the final output.

The encounter between data journalists and citizen scientists opens the opportunity to tell stories not only about the results and the actual piece of news but more interestingly and importantly, to explain the reasons why a certain project has been undertaken and its methodology, making it open and transparent to those who read it. A data story can engage readers at many levels, proving to be a good means of discussion about the quality of the data, the methods applied to collect and analyse these, and the alternatives or future developments of a project. In other words, building a piece of data journalism resembles, to a point, the development of a science project and can therefore represent a good common ground to build shared knowledge on a certain topic.

However, a good collaboration between CS projects and journalists has very specific challenges that need to be addressed. Some of them became clear during the NEWSERA kick-off meeting, and the subsequent rounds of Labs. These critical issues appeared to be crucial in the discussion around the development of an original and new concept of citizen science data journalism practice.

2. Barriers and Mitigation Strategies

When addressing science and data journalists as stakeholders, we have found common barriers faced by the NEWSERA Pilots. Hereby we propose several mitigation strategies that can be planned in order to avoid or overcome these.

Barriers	Mitigation strategies
Setting the agenda. While it is acceptable for CS projects to practise civil advocacy around a certain topic, journalists should always maintain a detachment and a critical approach to all parties involved in a specific issue, as it is demanded by their deontology.	Any collaboration will have to take into account the needs of both parties, and their expectations, to define their standing point before sharing data and information. Journalists cannot become spokespersons of the CS projects. CS projects cannot be simply viewed as a source but rather as a co-producing party in the process of building a piece of news.
Methodological issues. There is no agreement on what to publish, how to tell stories, which points should be highlighted.	Scientists should be involved in the discussion also about the actual angles, storyline, and main key points, to avoid introducing controversial or irrelevant information into the final product.
Lack of trust. Scientists and journalists have a very different way of working, depending also on the nature of the institution or organisation they collaborate with. For journalists, stories have to be relevant and newsworthy, for the scientists the focus is more on the scientific impact and literacy they can produce.	Journalists think they have the ability to craft a good story that is relevant for the media system, scientists feel that often they might miss or mistreat the true significance of the data and the results. The only meeting point is truly that of finding a common ground and establishing a communication in an early phase so to decide an angle that is acceptable for the two parties.

Finding a narrative. CS projects' methodology is designed in order to be scientifically valid and, thus, replicable and used in peer-reviewed scientific publications. However, journalistic products are not reports or scientific papers but stories with a narrative.	Leave space for other facts, data and stories to be included in the final journalistic product. The selection of the data to be used should be done collaboratively: there has to be a mutual understanding of how the story should be shaped in its final format.
Property of the data and their licence.	An open science approach is always preferable. However, if the data is due for publishing in a scientific journal, there should be an agreement in deciding how and what can be publicly shared.
Exclusivity and timing. Both scientists and journalists have competitors. The timing of a scientist and of a CS project might not coincide with that of a journalist.	Try to be open and transparent of the respective time constraints and needs. Also, make sure there is an understanding of the factors influencing the timelines: both scientific journals and media publications might be delayed for reasons that are not under the control of the two players.
Training needs. Scientists know very little of the way the media system works. Journalists do not necessarily know the way science knowledge is produced and validated.	Knowledge and training are necessary and useful to enable scientists to understand how the journalists select a project for their story. Programs of journalists in residence or any way to create a stronger relationship with journalists during the development of the science project allows them to better understand the scientific method.

3.

Lessons learnt: NEWSERA Pilot Case studies

During the CitSciComm Labs with and for science journalists, a common methodology was discussed and defined for all CS projects on collecting, sharing and "interviewing" their data and preparing pitches or building the basis for a collaborative effort with the journalists. However, since not all the pilots have the same resources nor they produce the same type and amount of data, a differentiation was embraced during the Labs to give all projects the possibility to best choose the strategy with regard to their possibility to develop further data journalism outputs or other suitable formats to bring their work to a media publication.

3.1 Pitch and production of articles published on different media

Project

GENIGMA

Spain

The approach:
In the case of the GENIGMA, a more traditional pitch was prepared that finally got published in a regional catalan media, El Periódico.

The story:
The project aims at studying the genomic alterations in cancer cells. An app, launched by the Centre for Genomic regulation (CRG) that consists of a co-created game for smartphones has been developed and tested with citizens to assemble the 3D genomes of most used cell lines for cancer research. Citizens will solve research matrices, looking for the best position in space for the pieces. Each piece is, in reality, a genomic fragment and the challenge is to achieve a better solution than the algorithms and to determine among all the players what is the organisation in space and sequence of the DNA of cancer cells.

Entre todos
¿Puede un juego de móvil ayudar a entender el cáncer de mama?

Entre todos › Cartas de los lectores Club de animales y plantas Club de Ciencia Club de Estilo Club de Fitness Club de Historia

¿Puede un juego de móvil ayudar a entender el cáncer de mama?

Una aplicación lanzada por el Centre de Regulació Genòmica (CRG) pretende descifrar el genoma de células de cáncer de mama con ayuda ciudadana. Los investigadores esperan que la capacidad humana para detectar patrones supere los resultados que arrojan los algoritmos.

The article published on El Periódico.
https://www.elperiodico.com/es/entre-todos/20220412/juego-movil-entender-cancer-mama-genigma-13511234

Project

OBSERVATORIO DE LA SEQUIA *Spain*

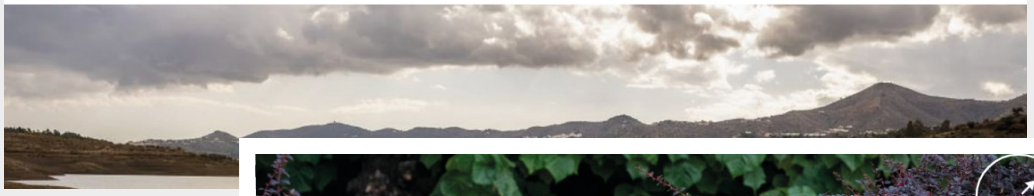
The approach:
In this case, Michele Catanzaro, a science journalist involved in the Labs, collaborated with the Draught CS Observatory (OCS), in Spain, to write a press release completed by data and charts.

The story:
The press release eventually led to the publication of a long in-depth article on the biggest national daily, El País, with the title “The Government plan for water resources keeps the pressure on irrigation systems, by the journalist Javier Martín-Arroyo, specialised in environmental topics.

SEQUÍA >

El plan del Gobierno para las reservas de agua mantiene intacta la alta presión del regadío

Los expertos alertan de que lloverá menos por culpa del cambio climático, pero persiste el gasto hídrico destinado a cultivos para el próximo lustro



Pilar Paneque, presidenta del Observatorio ciudadano de la sequía, en Sevilla.
PACO PUENTES

The article published on El Pais.
https://elpais.com/clima-y-medio-ambiente/2022-11-24/el-plan-del-gobierno-para-las-reservas-de-agua-mantiene-intacta-la-alta-presion-del-regadio-a-pesar-de-la-falta-de-lluvias.html

3.2

Pitch and production of articles published on different media

Four NEWSERA pilot projects were **paired** with data journalists who took part in the Labs and subsequently worked with the projects. The pairing activity allowed projects to better understand the process of writing a piece of journalism based on CS-generated data.

A series of dedicated meetings among the journalists and the pilots were focused on: going deep into the project dataset; defining the focus of the article, and discussing the final results. Some of the articles were completed and published, while some of them are still in the process of being produced. For instance, the project GelAvista was coupled with the portuguese data journalist Rui Barros that will likely publish on the **Blue section** in the PUBLICO newspaper during the summer time, due to the project being focused on a marine topic that is deemed to have a stronger impact on opening or closing the beaches.

Other pairings resulted in the production and publication of data journalism articles as detailed below.

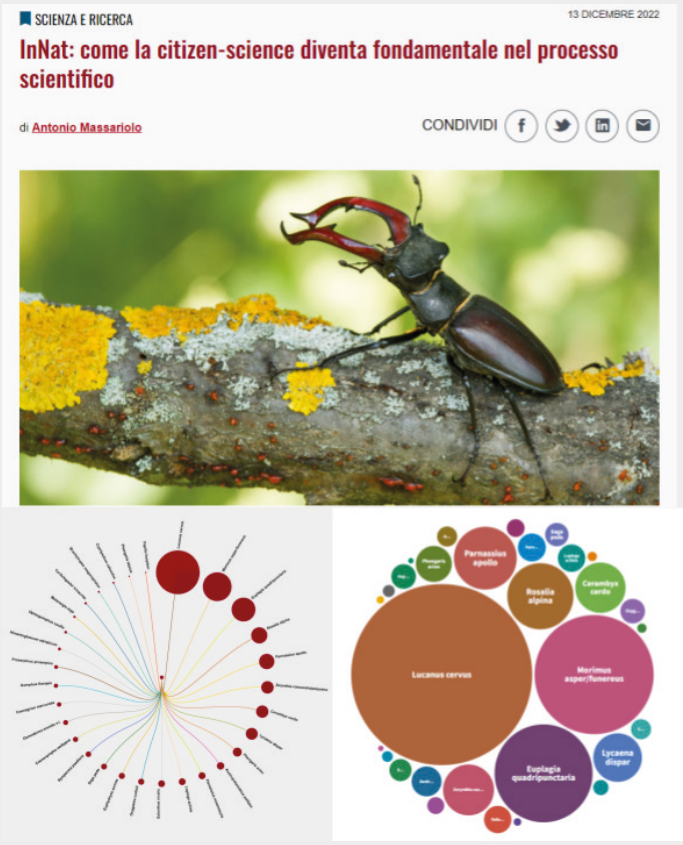
Project

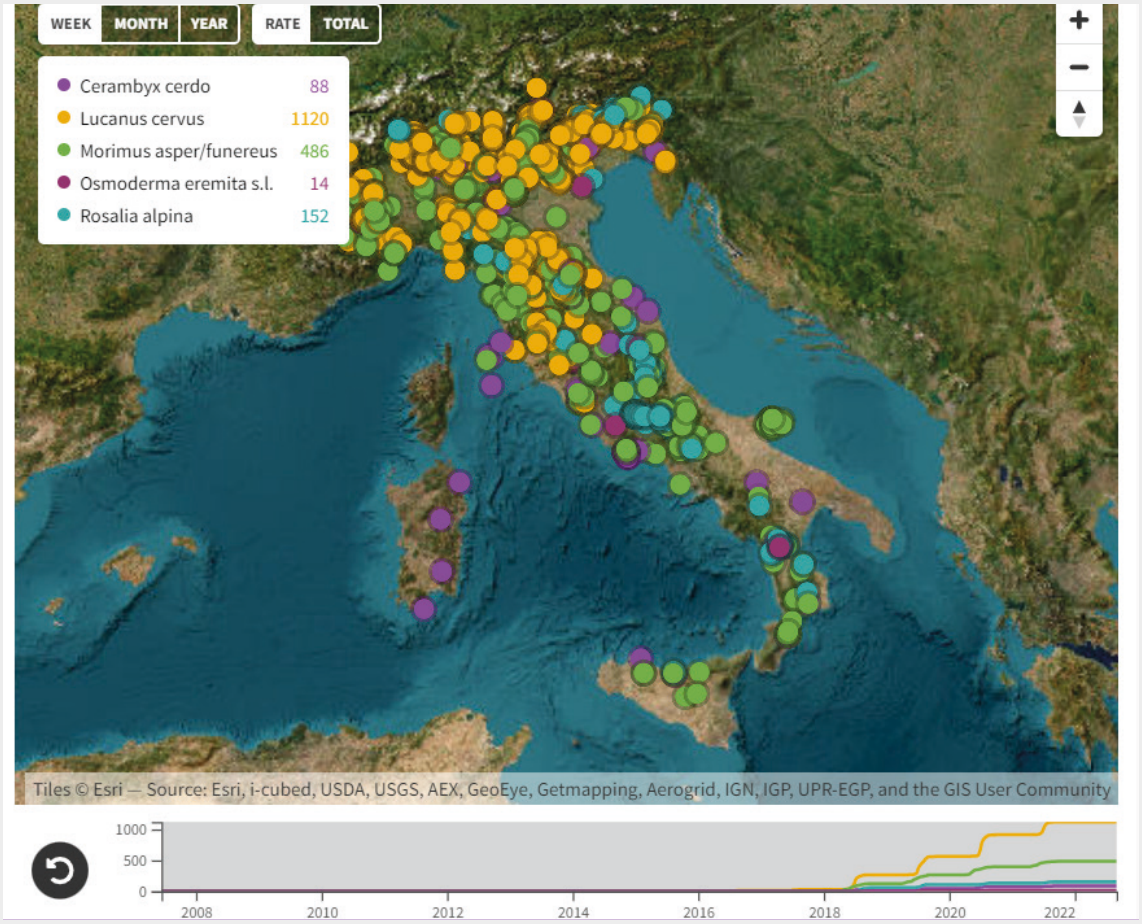
InNat

Italy

The approach:
A project on biodiversity, monitoring and measuring the presence of protected species in the country. In this case, the project was paired with data journalist Antonio Massariolo, at Il Bo Live, the digital magazine published by the University of Padova.

The story:
The result is a data journalism piece “Keeping track of insect protected species and plants in Italy” with interactive graphs, maps and visualisations published in December 2022, in Il Bo Live.





The article published on Il Bo Live
https://ilbolive.unipd.it/it/news/innat-come-citizenscience-diventa-fondamentale

Project

RomaUp

Italy

The approach:
A project that involved citizens in sampling, collecting and measuring the state of pollution of the river Tevere, in Rome, in eight different stations. In this case, the project was paired with data journalist Marco Boscolo, at Il Bo Live, the digital magazine published by the University of Padova.

The story:
The result is a data journalism piece “Roma Up” to investigate the health conditions of Tiber” with interactive graphs, maps and visualisations published in December 2022.

Livelli E. coli nel Tevere

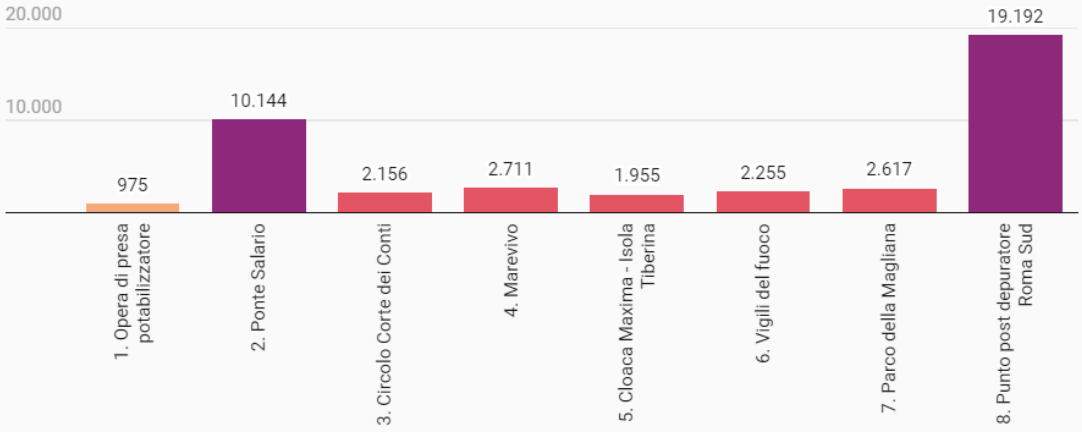
Dati in UFC (Unità Formanti Colonie) per 100 ml

Punto	1	2	3	4	5	6	7	8
marzo 2021						0	2.300	6.400
aprile 2021	0	0		2.800	1.200	1.900	2.700	34.000
maggio 2021	0	22.100	2.300	2.100	1.400	1.500	1.700	4.100
giugno 2021	200	18.600	4.000	4.300	3.100	2.000	1.000	2.400
luglio 2021	0	0	1.100	2.500	1.000	3.100	1.500	4.600
agosto 2021	2.000	7.600	100	2.300	400	1.800	700	2.600
settembre 2021	100	6.500	3.100	0	2.100	3.100	2.500	6.400
ottobre 2021	800	11.000	4.500	3.800	1.800	3.200	4.700	44.100
novembre 2021	500	4.100		3.000	3.700	1.800	2.900	21.300
dicembre 2021	2.500	4.700	2.300	2.900	3.200	2.500	4.200	39.200
gennaio 2022	1.300	5.300	1.000	700	1.000	1.500	1.400	34.000
febbraio 2022	400	0	1.000	0	2.600	2.400	5.800	31.200

Fino a 100 UFC/ml | 100 - 1.000 UFC/ml | 1.000 - 5.000 UFC/ml | 5.000 - 20.000 UFC/ml | >20.000 UFC/ml

Livelli medi di E. coli nel Tevere nei punti di raccolta

Dati in Unità Formanti Colonie (UFC) per 100 ml. Periodo marzo 2021 - febbraio 2022



Fonte: Report Finale a cura della coordinatrice scientifica Bruna Gumiero • Scaricare i dati • Creato con Datawrapper

The article published on Il Bo Live
https://ilbolive.unipd.it/it/news/grande-malato-roma-si-chiama-tevere

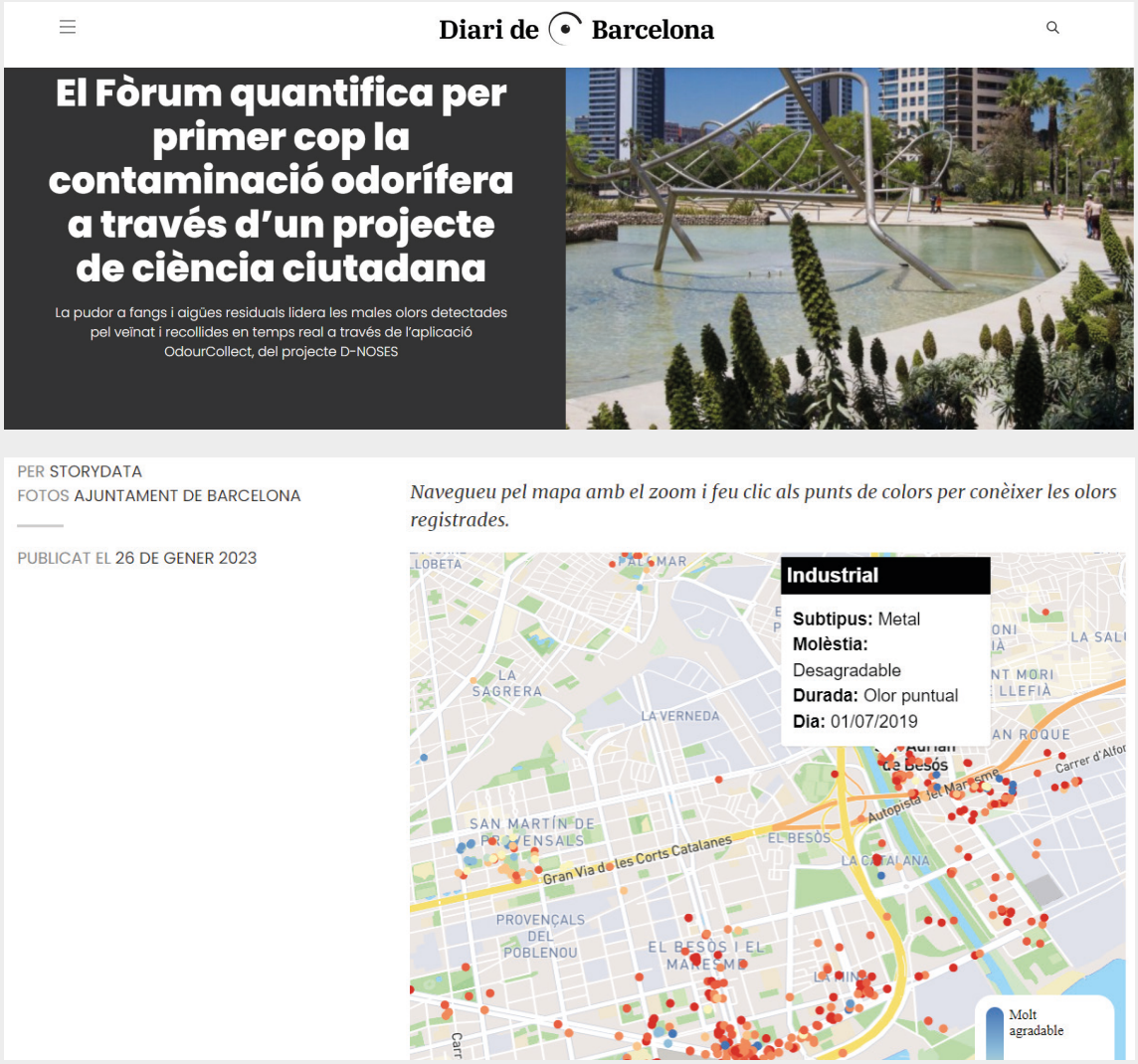
Project

D-NOSES/ OdourCollect

Spain

The approach:
A project that involved citizens in identifying, mapping and classifying odours in their area of residence. The project shows the value of CS can provide for local issues that affect a community, by explaining the roots of a problem and looking for a viable solution. The project was paired with data journalist Eli Vivas and Storydata.

The story:
The result is a data journalism piece “Forum quantifies odour pollution for the first time thanks to a citizen science project” with interactive graphs, maps and visualisations published in January 2023, by the newspaper Diari de Barcelona. The article was published in two versions, one for website and another for mobile.



Diari de Barcelona

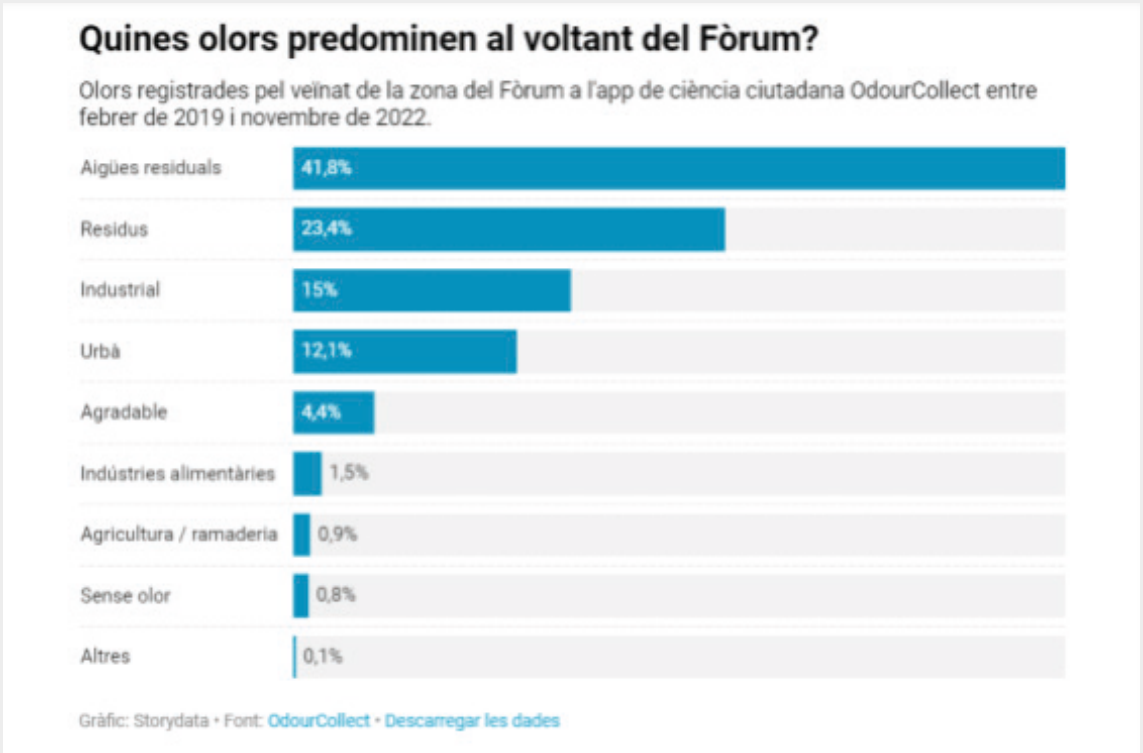
El Fòrum quantifica per primer cop la contaminació odorífera a través d'un projecte de ciència ciutadana

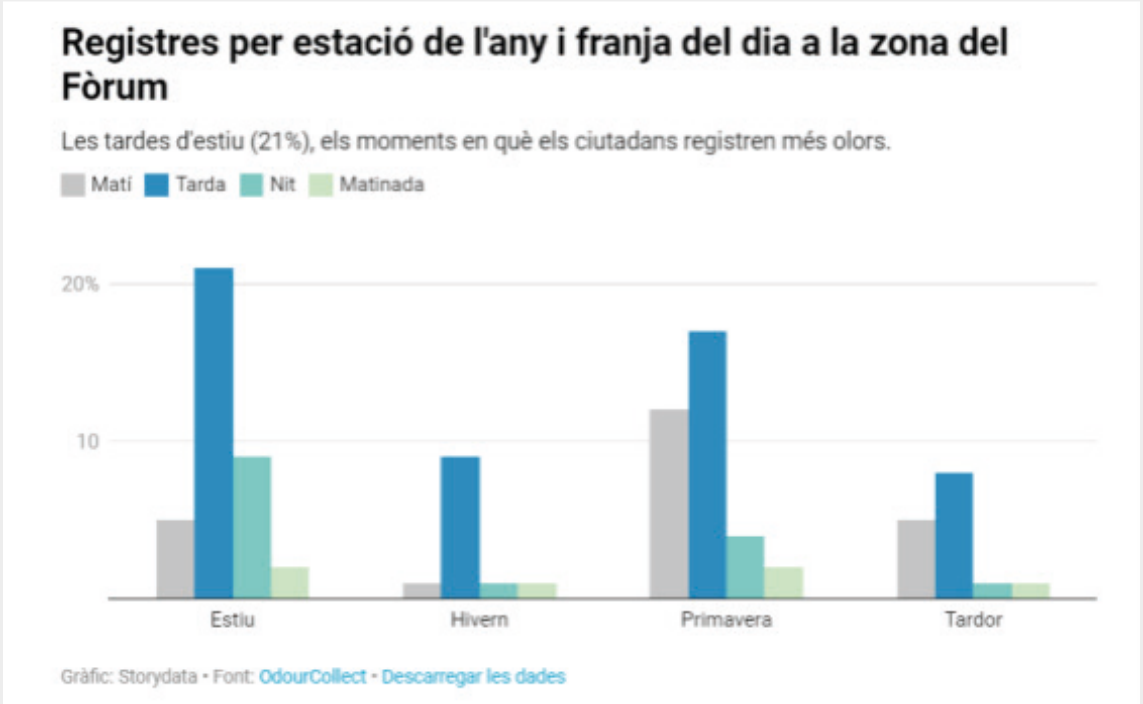
La pudor a fangs i aigües residuals lidera les males olors detectades pel veïnat i recollides en temps real a través de l'aplicació OdourCollect, del projecte D-NOSES

PER STORYDATA
FOTOS AJUNTAMENT DE BARCELONA

PUBLICAT EL 26 DE GENER 2023

Navegueu pel mapa amb el zoom i feu clic als punts de colors per conèixer les olors registrades.





The article published on Diari de Barcelona
https://www.diaridebarcelona.cat/w/forum-quantifica-primer-cop-contaminacio-odorifera-traves-projecte-ciencia-ciutadana

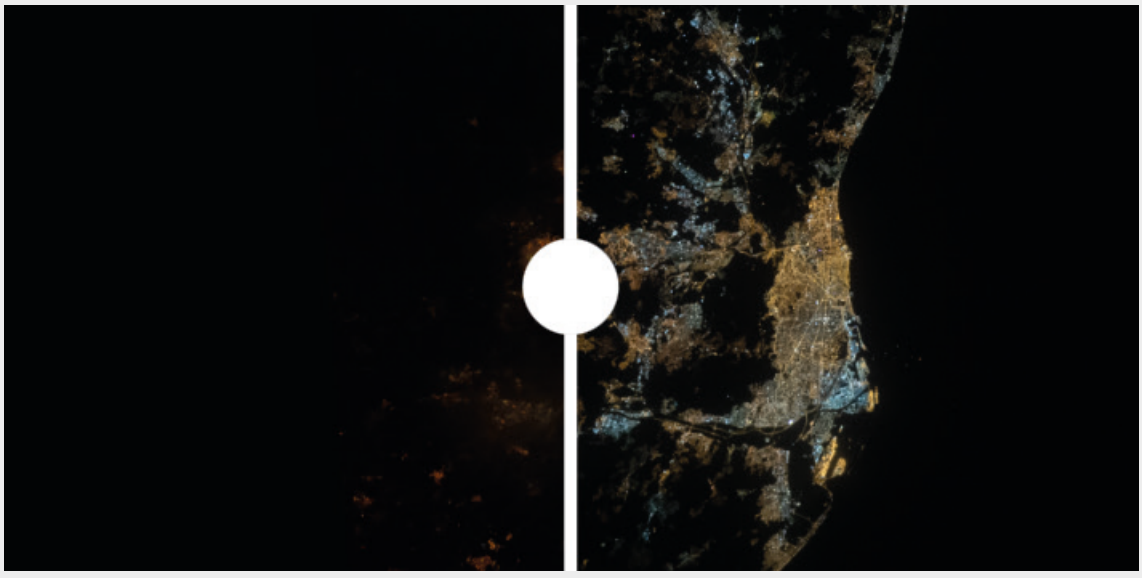
Project

Cities at Night

Spain

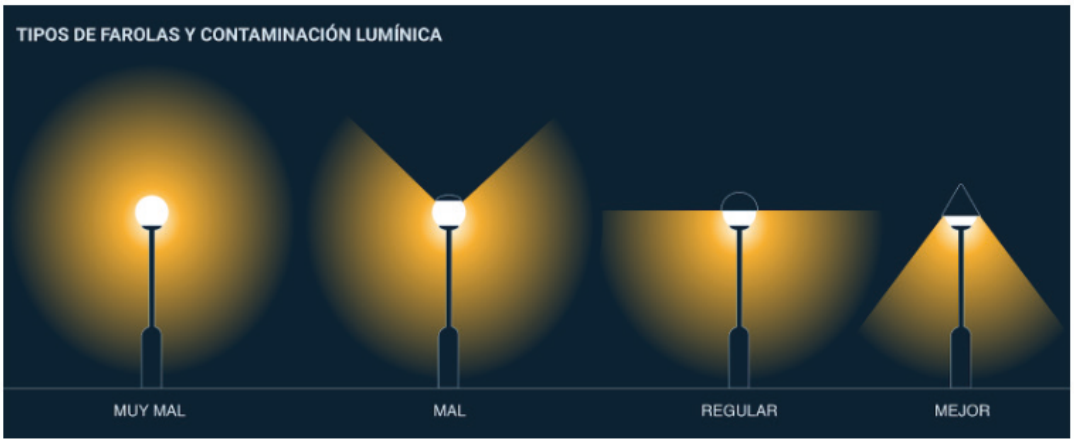
The approach:
A project that aims to create a map of the earth at night using colour pictures with 10 times more resolution than it was available for the public so far. With a database of almost half a million photographs the project goal is organising, cataloguing, georeferencing and calibrating them for science research purposes.One of the fields of application of this project is the study of light pollution. In this case, the project was paired with data journalist Eli Vivas and the team from Storydata.

The story:
The result is a data journalism piece “The dark side of LEDs” with interactive graphs, maps and visualisations published in February 2023, by the newspaper Diari de Barcelona. The article was published in two versions, one for website and another for mobile.



Los ecosistemas, también en peligro

¿Cómo minimizar la contaminación lumínica?



The article published on Diari de Barcelona
https://www.diaridebarcelona.cat/w/la-part-fosca-del-led-contaminacio-luminica-barcelona-enllumenat-public

Project

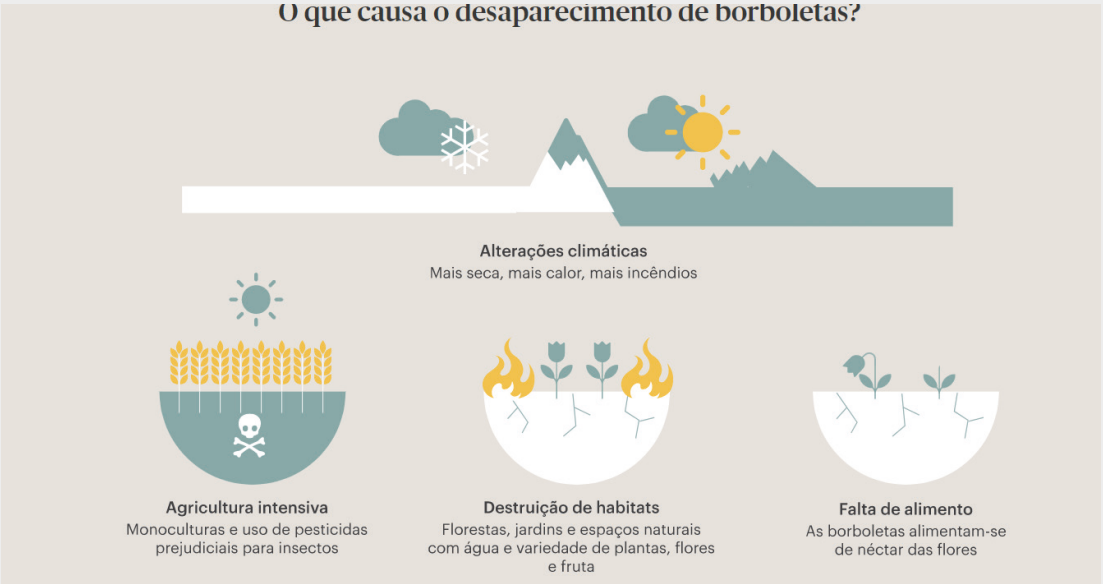
Censos De Borboletas

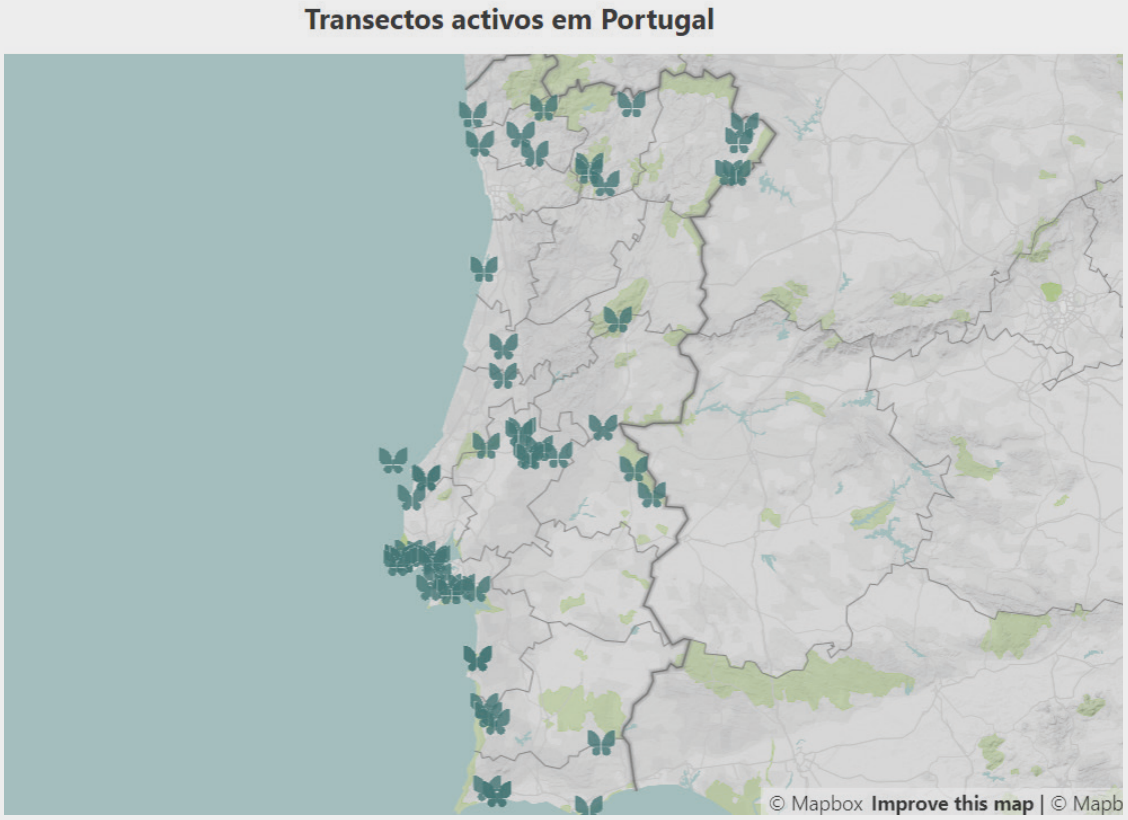
Portugal

tagis | Centro de Conservação das Borboletas de Portugal

The approach:
Even though this was not a direct product of NEWSERA, we would like to highlight this article published by the newspaper PUBLICO, that developed in two articles (one originally from 2019 and one during NEWSERA) the last one. won the European Newspaper Award - Awards of excellence - Storytelling Multimedia.

The story:
A project on biodiversity that explores and counts butterflies species to monitor their status in the country.





The article published on PUBLICO
https://www.publico.pt/2022/04/26/infografia/borboletas-reflexo-colorido-perda-biodiversidade-676

3.3

Other media formats: Podcast

As previously mentioned, NEWSERA pilot projects during the course of NEWSERA revealed several needs regarding training, either for their project research members who normally are not involved in science communication activities, as well as, life-long capacity building for those who have science communication professionals within their teams. As such, NEWSERA provided an **informal training** in the format of express workshops, during lunch hours to reach wider audiences, outside NEWSERA. One of these workshops was dedicated to podcasting, a media format on the rise since the last years and is still gaining track. Besides theoretical and practical examples, we also focused on the importance of diversity and inclusiveness on the sources used, especially taking into account the gender perspective.

Projects

Cities at Night, Mammalnet, OCS (Spain), GelAVista, Vacaloura.pt (Portugal)

The approach:
A Podcast dedicated to the CS Iberian landscape with many of the project, (Spain) During NEWSERA informal trainings organised by FECYT, oOne of the training workshops undertaken within NEWSERA was focuses on Podcasting, organised in collaboration with Manuel Vicente from Efervesciencia Podcast, a radio program produced by the Universidade de Santiago de Compostela and distributed by the Radio Galega, and Joana Magalhães from Science for Change, who is also women in science correspondent in the program.
The workshop had a **practical exercise**, where the two hosts interviewed selected NEWSERA pilots to participate in a **monographic radio program**.

The story:
The two hosts interviewed selected NEWSERA pilots to participate in a monographic radio program **“the sound map from citizen science projects in the Iberian Península”**, broadcasted in Radio Galega, on the 29th of June and further released as a podcast in different platforms. The projects involved were: Mamalnet in Ciudad Real with José Antonio Blanco (Instituto de Investigación en Recursos Cinegéticos-CSIC-UCLM), "Observatorio Ciudadano de la Sequía" in Sevilla with Pilar Paneque (Universidad Pablo Olavide), Xente de 100cia in Cambre with José Viñas (IES David Buján), "Cities at Night" in Madrid with Alejandro Sánchez de Miguel (UCM e University of Exeter), GelAVista in Lisbon, with Antonina Santos (Instituto Português do Mar e da Atmosfera) and Vacaloura.pt in Oporto, with João Gonçalo Soutinho.

Link to original podcast (in Galician, Spanish and Portuguese simultaneously).

https://podcasts.apple.com/py/podcast/efer-602-29-6-22-atlas-sonoro-da-ciencia-cidad%C3%A1-na/id1075873473?i=1000571260526

3.4

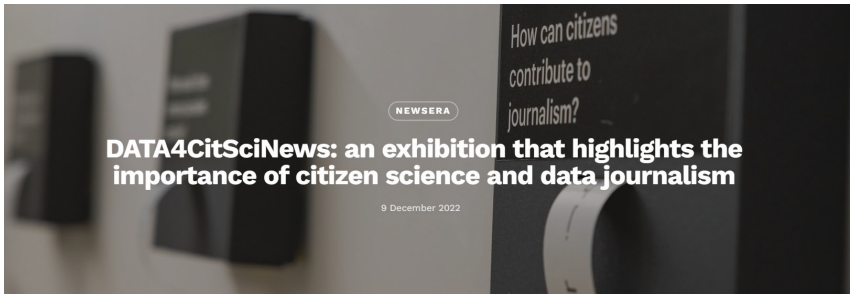
Art-Science connections

The Data4CitSciNews Exhibition

Data provides neutral and direct representations of the world, but is also involved in politics, culture, money and power. Citizen science journalism is an emerging concept that brings together citizen science and data journalism. Cooperating in the definition of the information needs of citizens and designing the collection of adequate sets of data in a participatory and transparent manner can contribute to their use to promote change for the benefit of local communities and advocate for democracy.

The **#DATA4CitSciNews exhibition**[1], produced by Science for Change and curated by Joana Magalhães, was inaugurated at "The Green Parrot" gallery on November 28, 2022, in Barcelona. The exhibition featured interactive installations, co-creation processes and research methods that open a debate on how citizens and professionals in the journalistic world can come together to face current needs, especially in times of misinformation and fake news, and explore the potential of visual narratives, data journalism and the principles of quality scientific journalism.

The exhibition was again exhibited with new modules in the NEWSERA final event on March 29, in "Au Bassin", in Brussels, and will continue to live on after the project ends.



(1) https://newsera2020.eu/2022/12/09/data4citscinews-exhibition/

The way to go: recommendations to efficiently engage with science and data journalists for broader impact

- **Build the relationship well in advance** and not once the project is completed - journalists and scientists need to allow time and resources to understand each other, to be clear about the expectations, motivations and goals that drive their respective actions.
- **Establish a common language** that allows both to craft the description of the story and to evaluate its newsworthiness.
- **Maintain the relationship in time**: once there has been a contact between the CS project and the journalist, it is useful to share new data, even if they are not ready to be used and published, to discuss together on the next steps and find a timing and an angle that serves both parties.
- **Work to create a setting where there is an exclusive relationship between the projects and the journalists:** respect each other's time constraints while at the same time try and identify the elements that render the collaboration a win-win situation.
- **Share the data in an open way:** previewing the data is a key step to ideate and design several stories by selecting the most newsworthy ones or the most suitable to a specific media and audience in a certain moment. When the data are in proprietary format and difficult to read and analyse with common softwares, the journalist is basically left out of the chance to understand the story properly and to see which other elements might be needed to complete it.
- **Ideally, the data could go in the direction of becoming a common good:** for instance, using the data to organise a hackathon with the project participants, the journalists and other stakeholders might prove a powerful way to collaborate, co-create, co-design and look into innovative solutions.
- **Not all stories fit the same audience.** In general, stories are not reports and journalism is about making a story relevant for people by highlighting those elements that might have an emotional, narrative, empathetic impact on the audience. In addition, relevant stories are often resonating with a broader public interest, be it of political, social, or cultural nature, such as the environmental crisis, the health issues, the humanitarian topics and so on.
- **Make an effort to combine a compelling narrative with rigour.** Scientists often feel that their work is vilified if there is not careful consideration of the accuracy and correctness of data, descriptions and explanations. While scientists have to take a step further to improve their communication ability, journalists should make an effort to understand the scientific process, the way data is produced and validated, and the basic rules of the scientific methodology.
- **Embed a communication expert in the scientific project at the moment the project is designed.** Having a data journalist capable of giving feedback and indications on the project scope could lead to collecting additional information that might be strengthening a story throughout the length of the project.
- Look for opportunities to meet and discuss and learn in informal settings: conferences, science café or after work informal events are usually a great kick-off opportunity to look into future collaborations and, mainly, to get to know someone without being under the pressure of a defined role.
- **The co-production of a journalistic story is a challenge worthy to be undertaken.** Being able to work together in selecting data, the pieces of relevant content, the angle to use, the preferred format and the audience to talk to, might prove a winning strategy to give proper recognition to all the expertise involved and to reinforce the collaboration for further stories to come. The journalists would not feel that they are merely called upon to amplify the outreach when the projects wish to have it; the citizen scientists would feel more legitimised if their role and work is explicitly recognised in the final output and are not solely used as a source of data.

General resources

NEWSERA Policy Briefs

NEWSERA Policy Brief 1
https://doi.org/10.5281/zenodo.4837244

NEWSERA Policy Brief 2
https://doi.org/10.5281/zenodo.7752561

Guides and online training

Guide of science communication for citizen science projects and citizen science journalism
https://doi.org/10.5281/zenodo.7752525

How do you transform citizen science data into a news story?
YouTube link:
https://youtu.be/Y_lAo321_V4
Invited talks from science and data journalists - only available in Spanish

Data4CitSciNews conference
YouTube link: **https://www.youtube.com/live/EwDdfJ7yFoY**
Invited talks from scientists, journalists and designers to debate on the state of the art in data journalism, fake news and the concept of citizen science journalism

Online workshop on common challenges for citizen science: communication. Organised by Scivil – Citizen Science Vlaanderen YouTube link: **https://youtu.be/9a700xeWTeQ**

Relevant Publications from the NEWSERA Consortium in Open Access

Magalhães, J., Guasch, B., Arias, R., Giardullo, P., Elorza, A., Navalhas, I., Marín-González, E., Mazzonetto, M. and Luís, C. (2022). 'A methodological approach to co-design citizen science communication strategies directed to quadruple-helix stakeholders'. JCOM 21 (04), A05.
https://doi.org/10.22323/2.21040205
Here you will find our methodology to co-design a CS project communication strategy together with the stakeholder of interest. You can adapt to your own specific case.

Luís, C., Navalhas, I., Marín-González, E., Magalhães, J., Arias, R., Giardullo, P., Leguina, L. Keeping participants engaged in citizen science projects: the role of science communication strategies. PoS (CitSci2002) 017.
https://pos.sissa.it/418/017/pdf
Here you will find a methodology to discuss with CS project managers, participants, and other stakeholders, the challenges faced in maintaining long-term engagement, specifically focusing on citizens as the main stakeholder target group.

Giardullo, P., Neresini, F., Magalhães, J., Luís, C., Marín-González, E. and Arias, R. (2023). Citizen science and participatory science communication: an empirically informed discussion connecting research and theory. JCOM 22(2), A01.
https://doi.org/10.22323/2.22020201
Our exploration consisted in a survey involving 157 CS projects around the EU. We found that CS projects tend to communicate through social media mainly reproducing a knowledge transfer mode. This may hinder effective encounters with both participants and potential target audiences.

Giardullo, P., Arias, R., Leguina, L., Magalhães, J. (2021) Responsible and inclusive citizen science: comparing initiatives and assessing impacts. Tecnoscienza 24, 12, 2
http://www.tecnoscienza.net/index.php/tsj/article/view/480/294.
This paper resumes the variety of notions of participation, citizenship, and democratization of science in CS as they emerged during a panel carried out during the XIII STS Italia Conference "Dis/entangling Technoscience" held in June 2021.

Relevant public deliverables from the NEWSERA Consortium

Giardullo P, Citarella MA, Neresini F, Magalhães J, Arias R, Guasch B, Pelacho M, Luís C (2021) NEWSERA - Report on indicators for impact assessment of science communication in Citizen Science Projects (Deliverable 2.2) (1.1). Zenodo.
https://doi.org/10.5281/zenodo.5139999

Leguina, Magalhães J, Tola E, Guasch B, Elorza A, Lacunza I, Arias R. (2023). Citizen Science as a communication tool in the Post-Factual Era. (Deliverable 3.7) (v1.2). Deliverable report of project H2020 NEWSERA (grant agreement No 873125). Zenodo.
https://doi.org/10.5281/zenodo.7689045

Relevant Publications from our Pilots

Liñán S, *et al.* (2022) A new theoretical engagement framework for citizen science projects: using a multi-temporal approach to address long-term public engagement challenges. Environ. Res. Lett. 17 105006
https://doi.org/10.1088/1748-9326/ac939d

Garrison H, Agostinho M, *et al.* (2021) Reflections on meaningful and impactful stakeholder engagement in fundamental research. EMBO Reports (2021)22:e54000
https://doi.org/10.15252/embr.202154000

Others

Frontiers Research Topic "Bridging Citizen Science and Science Communication", with Yaela Golumbic, Alice Motion, Joseph Roche and Joana Magalhães as co-editors
https://www.frontiersin.org/research-topics/48185/bridging-citizen-science-and-science-communication

Carayannis EG and Campbell DFJ (2009) 'Mode 3' and 'Quadruple Helix': toward a 21st century fractal innovation ecosystem. Inter J Tech Manag, 46:3-4, 201-234.
https://doi.org/10.1504/IJTM.2009.023374

A 10-step guide to writing citizen science project descriptions that spark interest and attracts volunteers - CS Track Project
https://cstrack.eu/format/news/how-to-write-an-engaging-citizen-science-project-description/

SwafS-19 sister Projects

"Science communication: Empowering citizens in the public discussion of science"- CORDIS RESULTS PACK
https://cordis.europa.eu/article/id/442429-science-communication-empowering-citizens-in-the-public-discussion-of-science

Roche J, Arias R, Bell L, Boscolo M, Fornetti A, Knutas A, Kupper F, Magalhães J, Mannino I, Mendoza I, Moreno-Castro C, Murphy K, Pridmore J, Smyth F, Tola E, Tulin M, Weitkamp E and Wolff A (2021) Taking Stock and Re-Examining the Role of Science Communication. Front. Environ. Sci. 9:734081.
https://www.frontiersin.org/articles/10.3389/fenvs.2021.734081/full

EU Funding Opportunities

EU Prize for Citizen Science and Accelerator Open Call - **https://impetus4cs.eu/**

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