The Use Case Observatory

A 3-year monitoring of open data reuse cases to understand the economic, governmental, social and environmental impact of open data

Volume II

data.europa.eu
The official portal for European data

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Executive summary

The Use Case Observatory, initiated and conducted by data.europa.eu, the official portal for European data managed by the Publications Office of the European Union, serves as a comprehensive research project to assess the economic, governmental, social and environmental impact of open data across Europe from 2022 to 2025. *The Use Case Observatory* focuses on monitoring and analysing reuse cases, aiming to contribute valuable insights to the broader goals of data.europa.eu.

The ongoing research spans a 3-year period, with the inaugural volume of results published in 2022 and this second volume expanding on the initial findings. In this second volume, 13 selected reuse cases were monitored to evaluate how open data creates impact, addressing the economic, governmental, social and environmental dimensions.

The methodology involved an initial selection of 30 reuse cases, considering applications, platforms or websites developed in Europe. The cases were categorised based on their economic, governmental, social and environmental impact dimensions. The second volume built upon this methodology, employing an exploratory scan to assess ongoing activities, followed by semi-structured interviews with contacts for each reuse case. Summaries of these interviews form the core of this report.

The takeaways from the four impact dimensions are the following.

- Economic impact is illustrated by Naar Jobs West-Vlaanderen, demonstrating the potential of open data in fostering economic development, job creation and entrepreneurship.
- Governmental impact is exemplified by Waar is mijn stemlokaal? and Statsregnskapet.no, showcasing the power of open data in enhancing decision-making, transparency and accountability.
- Social impact is highlighted by six diverse cases, such as UniversiDATA-Lab and VisImE-360, emphasising open data's role in fostering collaboration, inclusion and improved public services.
- Environmental impact is showcased with four cases, Digital Dryads, Air Quality in Cyprus, Planttes and Environ-Mate, illustrating the contribution of open data in addressing environmental challenges and conservation efforts.

The Use Case Observatory contributes significantly to the understanding of open data's impact in Europe. It underscores the challenges faced by these initiatives in securing sustainable funding for scaling. The interviews with contacts of reuse cases reveal diverse and meaningful impacts, ranging from job assistance to climate change awareness.

Ongoing support for the reuse community is identified as crucial for maximising the potential impact of open data. To unlock more of its potential, continuous support for the reuse community is vital. Additionally, there is a need for a deeper understanding of how to create and measure open data's impact effectively. *The Use Case Observatory* highlights the necessity of identifying financial growth opportunities to ensure the sustained impact of open data initiatives.

In summary, this second volume of *The Use Case Observatory* not only reinforces the importance of open data reuse but also signals the need for ongoing efforts to fully leverage its impact on Europe's economy, government, society and the environment.

1. Introduction

The Use Case Observatory (hereafter referred to as 'the observatory') is a research project initiated and performed by data.europa.eu, the official portal for European open data, managed by the Publications Office of the European Union. The purpose of this research project is to contribute to data.europa.eu's broader goal of measuring the economic impact of open data across Europe over a span of 3 years (2022–2025). The first volume of the observatory was published in 2022.

The observatory targets two main stakeholder groups. On the one hand, the observatory demonstrates to open data providers, such as governments and public bodies, the value of open data for their economy, society and policymaking and encourages them to provide more and better-quality data to make reuse possible. At the same time, the observatory shows open data portal managers the types of reuse cases that continue to grow in the medium-to-long term, thus helping them to rethink their approach when interacting with developers and providers.

The goal of the observatory is to answer the following questions.

- What is the economic, governmental, social and environmental impact of open data for the specific reuse cases collected?
- How important is it to keep track of such reuse cases to understand and foster value creation through open data in Europe?
- What else can be learned from the analysed reuse cases to improve open data measurement and implementation across Europe?

In the inaugural volume of the observatory, 30 selected reuse cases were categorised into four key impact dimensions: economic, governmental, social and environmental. The economically impactful cases highlighted the crucial role of open data in assisting businesses in identifying profitable public procurement tenders, applying for jobs and pursuing professional opportunities. Governmentally impactful cases showcased how open data contributes to transparency in political processes, thereby fortifying democracy. Within the realm of social impact, reported cases illustrated the use of open data to improve public health, data literacy and fostering inclusivity. Finally, the environmental impact was evident in reuse cases focused on monitoring air quality and supporting initiatives for forest preservation.

This second volume of the observatory expands on the findings reported in the first volume and highlights changes in the development and impact of some of the same reuse cases. Not all 30 reuse cases responded to the request for interviews from the data.europa.eu team, and some responded that nothing has changed over time. This ultimately resulted in a smaller sample size of 13 reuse cases for this second volume of the observatory.

The rest of this report is structured as follows. Section 2 focuses on the methodological approach taken for selecting and analysing the reuse cases. Section 3 presents the reuse cases along the four impact dimensions (economic, governmental, social and environmental). Finally, section 4 summarises the general findings and lessons learned from the second part of this research.

2. Methodology

For the first volume of the observatory, 30 reuse cases were selected to be followed over the course of 3 years. Only reuse cases of applications, platforms or websites developed in Europe were considered. The intention was to keep a fair balance of reuse cases from EU Member States, possibly including examples from the United Kingdom, European Free Trade Association countries and neighbouring countries. In addition, focus was placed exclusively on reuse cases in the inventory that belonged to specific sectors, with the aim of retaining a good mix of reuse cases that have an economic, governmental, social or environmental impact – the four impact dimensions on which the open data maturity assessment is also based.

- The economic impact dimension was defined as including reuse cases in business creation and/or entrepreneurship and (re)skilling of workers.
- The governmental impact dimension was referred to as reuse cases in e-government support, government transparency and government accountability.
- The social impact dimension was agreed to encompass reuse cases in healthcare and well-being, along with integration and fighting against inequality in society.
- The environmental impact dimension was understood as referring to reuse cases in environmentally friendly services and energy reduction.

The methodology of this second volume built on the selection of the 30 reuse cases of the first volume.

- Firstly, an exploratory scan was performed to find out if the initial 30 use cases were still active/ongoing. For this scan, desk research (Google searches, website analyses and social media checks) was performed to find recent activities of the use cases. This helped to be fully prepared for the interview.
- Secondly, interviews were planned with contacts per reuse case. The duration of these interviews was between 15 and 30 minutes per reuse case and followed the interview guide (See Annex II) in a semi-structured format. This interview guide functioned as a checklist to ensure that the sought-after insights for the observatory were gathered, but there was room left to also zoom in on other topics relevant to the research.
- Thirdly, the interviews were summarised and shared with the interviewees for validation. These summaries are the core of this report, bringing to light the challenges and opportunities of making an impact with open data.
- Finally, the draft final report was created, proofread and ultimately published.

3. Reuse cases analyses

This chapter presents the 13 reuse cases clustered within the four impact dimensions. Figure 1 provides an overview of this clustering per impact dimension.

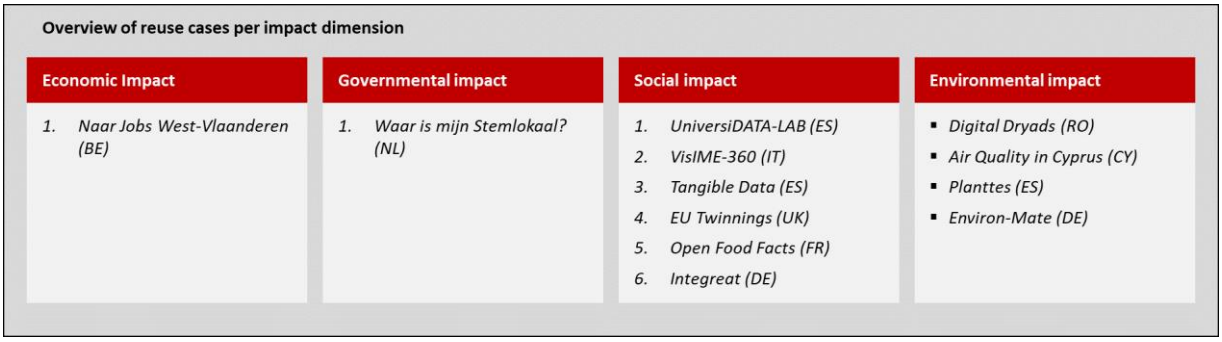

Figure 1: Clustering of open data reuse cases per impact dimension.

Economic impact (1 use case)

1. **Naar Jobs West-Vlaanderen** (To Jobs West Flanders) **(Belgium)** helps people find jobs close to them and lets users select whether they will travel by bike, car or train. The application also provides information on the transport options provided by employers to new employees.

Governmental impact (2 use cases)

1. The **Waar is mijn stemlokaal?** (Where is my polling station?) **(the Netherlands)** platform helps users find a suitable polling station close to them. Citizens can also find information about opening times and whether the polling stations are accessible for people with certain disabilities.
2. **Statsregnskapet.no (Norway)** is a website that visualises government spending and budgets. Its goal is to facilitate financial transparency and enable the public to easily find information about the spending of resources by government administrations.

Social impact (6 use cases)

1. **UniversiDATA-Lab (Spain)** is a repository of analytical applications based on open data published by the six Spanish universities that are part of the UniversiDATA portal. Its aim is to transform the static analyses of a portal's section into dynamic results.
2. **VisImE-360 (Italy)** explains Eurostat's data on visual impairment on a single informational website, helping to allocate resources for medical aid.
3. **Tangible Data (Spain)** transforms data from its digital context into a physical one by creating data sculptures in a public space, which helps people who lack certain digital skills experience the data.
4. **EU Twinnings (United Kingdom)** is a website that uses open data from Eurostat to make statistics accessible to a wider audience and shows similarities across EU regions.
5. **Open Food Facts (France)** is a large database of food products that creates easy-to-understand information about the nutritional value and environmental impact of food.
6. **Integreat (Germany)** is a digital platform that provides newly arrived migrants and refugees with all the relevant information in several languages at the municipal level.

Environmental impact (4 use cases)

1. **Digital Dryads' application (Romania)** aims to protect forests from illegal deforestation in Europe by combining aerial and multispectral satellite imagery.
2. **Air Quality in Cyprus (Cyprus)** provides residents with real-time information about several forms of air pollution. Users can find the data online or choose to be proactively informed about certain substances via the application on their smartphone.
3. **Planttes (Spain)** is a citizen-science application that informs users about which plants are in bloom and whether this might affect any people with pollen allergies.
4. **Environ-Mate (Germany)** is an interactive platform to empower children with knowledge about climate change based on scientific data.

3.1. Economic impact

Naar Jobs West-Vlaanderen: finding jobs near you

Naar Jobs West- Vlaanderen in a nutshell

- **Service:** Naar Jobs West-Vlaanderen helps people find jobs near them and lets users select whether they will travel by bike, car or train (or a multimodal combination). The application also provides information on the transport options provided by employers to new employees.
- **Sector:** economy, job market.
- **Country of origin:** Belgium.
- **Data sources:** open data from national data portals (e.g. vacancy texts, company data).
- **Number of employees:** 9.
- **Website:** naarjobsinwestvlaanderen.be.

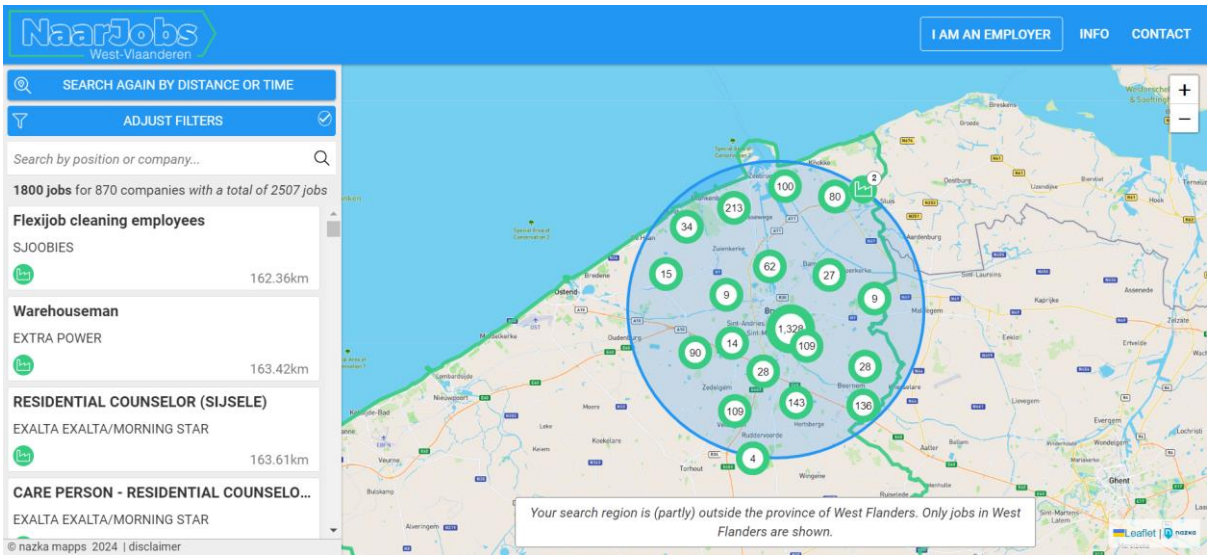

Figure 2: Snapshot of the Naar Jobs West-Vlaanderen portal.

Naar Jobs West-Vlaanderen (Dutch for: To Jobs West Flanders) is a platform dedicated to helping Belgian residents find employment based on their transport preferences. Users can choose between biking, driving or public transport, specifying their maximum commute time. The initiative's goal is to facilitate a comprehensive job search for individuals and assist companies in filling open positions by enriching vacancy data with precise employment site information. This innovative platform was created by Nazka Mapps, a young company which develops smart interactive web applications. The team at Nazka Mapps consists of nine members.

How does Naar Jobs in West-Vlaanderen create impact?

The tool has a significant impact on its audience by enabling job coaches to help job seekers in finding accessible job positions. It serves as a comprehensive platform, addressing 'traffic poverty' caused by insufficient travel options to find employment. The website is actively used by 50 professional job coaches in West Flanders, assisting approximately 5–10 unemployed individuals daily. Plans include extending the audience to Flanders by the end of 2024. Feedback is collected through a partnership with Mobiel 21, a Belgian organisation which specialises in sustainable mobility. This feedback ensures continuous improvement based on user satisfaction and needs.

The initiative started a collaboration with VDAB and is now exploring the integration of the service into their platform for mutual benefit. The win of a dissemination project with the federal government highlights the initiative's recognition and promotion on the national level.

Compared to the previous year, the focus has shifted to prioritise accessibility for non-car commuter travel modes. The web tool now has different versions for various target groups – a professional version for job coaches, a job accessibility promotion version for companies and an accessible search version for job seekers. The application has expanded its reach from the subregional level (West Flanders) to a broader regional and even national level, covering Flanders and Belgium.

The initiative primarily relies on publicly accessible data (open data), including vacancy data from the Flemish Employment Service (VDAB) portal, job site data from the Belgian Crossroads Bank for Enterprises and open data from OpenStreetMap and Belgian public transport service providers. Non-open data is utilised for companies with more than 100 employees, and it is obtained from their reports to the Belgian government. The platform has improved its processing algorithms for cleaning, matching and enriching datasets to create a unique company dataset with vacancies, locations and accessibility data. Developing the initiative without open data would have been challenging, both economically and in terms of innovation.

What are Naar Jobs West-Vlaanderen's goals for the future?

Over the next 2 years, the initiative aims to automate the update of datasets into its algorithm and dataflow. To enhance user experience, three different landing pages / versions will be created, targeting the specific audiences and simplifying the tool according to the needs of each user.

Technical issues related to the operational consumption of open data in terms of performance, availability and quality are acknowledged. Close collaboration between VDAB, the Belgian Crossroads Bank for Enterprises, OpenStreetMap and Belgian public transport providers is needed to suggest

innovations in open data offerings. Enriching, filtering and combining various data sources are identified as key elements for success.

Naar Jobs West-Vlaanderen has undergone significant changes to enhance its accessibility and impact. With a focus on different target groups, an expanded reach and future plans for automation and regional expansion, the initiative demonstrates a commitment to continuous improvement and addressing challenges associated with open data.

3.2. Governmental impact

Waar is mijn stemlokaal?: making voting easy and inclusive for everyone

Waar is mijn stemlokaal? In a nutshell

- **Service:** the Waar is mijn stemlokaal? Platform helps users find a suitable polling station near them. Citizens can also find information about opening times and whether the polling stations are accessible for people with certain disabilities.
- **Sector:** not-for-profit, government.
- **Country of origin:** the Netherlands.
- **Data sources:** open data from national polling stations.
- **Number of employees:** 5–10.
- **Website:** waarismijnstemlokaal.nl.

Figure 3: Snapshot of the Waar is mijn Stemlokaal? Portal.

The platform Waar is mijn stemlokaal? (Dutch for: Where is my polling station?), created by the Open State Foundation, offers citizens in the Netherlands a user-friendly way to locate their nearest voting

booth. The website allows users to filter search results based on accessibility criteria, including distance, opening times and special accommodations for those with disabilities. With a focus on open data, the platform collects standardised information from municipalities, achieving an 82 % adoption rate.

How does Waar is mijn stemlokaal? Create impact?
The Waar is mijn stemlokaal? initiative creates a significant impact by enhancing civic engagement and electoral transparency in the Netherlands. By providing comprehensive information, including accessibility criteria for citizens with specific needs, the platform ensures inclusivity. During the 2022 municipal elections, the website attracted 500 000 unique users, rising to 700 000 during the 2023 parliamentary elections. Media outlets utilised the platform's data for insightful reporting, emphasising early polling station openings during the pandemic. The platform's continuous updates, responsiveness to user feedback and initiatives to understand the needs of disabled individuals contribute to its ongoing impact.

Preceding the Dutch elections in 2023, the platform had already created an impact because it allowed for the creation of overviews of all the data at the municipal level. This data is not collected elsewhere, which makes the initiative very valuable to the Dutch Ministry of Internal Affairs. Members of Parliament have also been asking about the accessibility of polling stations, and during public debates, the name Waar is mijn stemlokaal? has been mentioned often.

What has changed compared to last year?
The Dutch Ministry of Internal Affairs has granted funding for this initiative, which allowed the Open State Foundation to create a development plan and initiate development activities. In 2023, there were two relaunches of the platform.

While in 2022 only 50 % of Dutch municipalities actively exchanged data with the platform, over the course of 2023, this grew to 90 %. This has resulted in a higher quality of information, which is measured through the execution of user research and ongoing conversations with various user groups.

Moreover, the Open State Foundation has seen a growing number of users throughout the year. During early elections at the provincial level, the platform registered a total of 900 000 users. The ambition to have 1 million users during the national elections of November 2023 was not reached owing to technical issues, but a staggering 740 000 users were registered.

What are Waar is mijn stemlokaal?'s goals for the future?
Ongoing improvements, the incorporation of user feedback and research on accessibility needs underscore the platform's commitment to civic engagement. The Open State Foundation aims for long-term funding to enhance data completeness and user-friendliness.

Statsregnskapet.no: a journey towards transparent financial clarity and accountability in Norwegian governance

Statsregnskapet.no in a nutshell

- **Service:** Statsregnskapet.no is a website that visualises government income and spending to facilitate transparency and enable the public to find information about the central government's accounts.
- **Sector:** government.
- **Country of origin:** Norway.
- **Data sources:** open data from government agencies (e.g. income, expenditure/costs, work-year / full-time equivalents).
- **Number of employees:** 5 people within the Government Agency for Public and Financial Management (DFØ) work part-time on statsregnskapet.no (two full-time-equivalent employees).
- **Website:** Statsregnskapet.no.

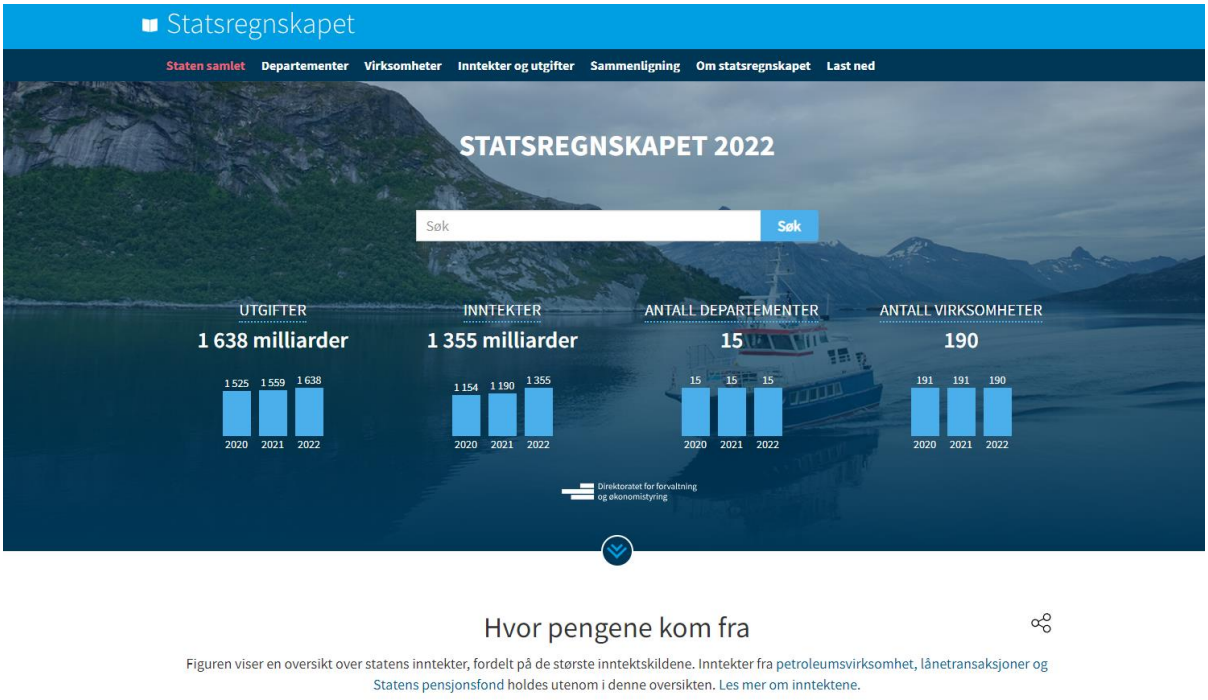

Figure 4: Snapshot of the Statsregnskapet.no website.

Statsregnskapet.no, run by the Government Agency for Public and Financial Management (DFØ), plays a crucial role in promoting financial transparency and accountability in Norwegian public administration. The initiative provides an easily accessible and understandable dashboard that offers an overview of the government's income and spending. The platform presents accounting data, including cash and accrual accounting, appropriations and full-time-equivalent data. Users can explore graphic representations, compare data across various parameters such as period, operating profit, assets, retention rates, etc. and gain insights into government finances at various levels.

How does Statsregnskapet.no create impact?

The impact is realised through the broad audience the platform caters to, including ordinary individuals, politicians, the media, academia, interest groups and government agencies. By making financial information readily available, Statsregnskapet.no empowers stakeholders to understand and analyse government income and spending, fostering a well-informed citizenry and contributing to the functioning of a transparent democracy.

What has changed compared to last year?

While the purpose and idea behind Statsregnskapet.no remain consistent with the previous year, there have been continuous efforts to improve the system. Minor enhancements, such as layout improvements and data presentation, have been ongoing. The long-term objective is to incorporate accrual accounting data, which is mandated for all government agencies by 2027. This represents a significant development, requiring preparations to collect, process and present this additional data. The challenge lies in managing the dual reporting of cash and accrual accounting data from approximately 200 government agencies.

DFØ has been proactive in marketing and outreach activities, conducting training courses and workshops in areas such as administration, management and public procurement and utilising annual surveys to gather feedback. Examples of training courses and workshops include the organisation of an informational meeting about Cloud Service Marketplace, a network meeting on socioeconomic analysis and an experience seminar on how to succeed with management team development.

What are Statsregnskapet.no's goals for the future?

Looking ahead, Statsregnskapet.no aims to continue its development by incorporating accrual accounting data from all government agencies. This aligns with the Norwegian Ministry of Finance's decision to make accrual accounting mandatory by 2027. The challenge lies in efficiently managing the increased volume of data and exploring opportunities to collect and present additional information of public interest.

DFØ plans to maintain its active approach to marketing and awareness initiatives, ensuring that the platform remains a valuable resource. The success of related training sessions and the expansion of exclusive products to a broader audience highlight the initiative's commitment to evolving and meeting the needs of its users.

In summary, Statsregnskapet.no strives to enhance transparency, engage a diverse audience and adapt to changing reporting requirements, contributing to the informed scrutiny of government finances and the overall health of Norwegian democracy.

3.3. Social impact

UniversiDATA-Lab: making university data publicly available

UniversiDATA-Lab in a nutshell

- **Service:** UniversiDATA-Lab is a repository of analytical applications based on open data published by the six Spanish universities that are part of the UniversiDATA portal. Its aim is to transform the static analyses of the portal's section into dynamic results.
- **Sector:** higher education.
- **Country of origin:** Spain.
- **Data sources:** open data from various national universities.
- **Number of universities involved:** 6.
- **Website:** www.universidata.es.

Figure 5: Snapshot of the UniversiDATA-Lab website.

In Spain, as in many other countries, universities face a primary obstacle in making their data publicly available due to resource scarcity, both financial and human. UniversiDATA and its subproject UniversiDATA-Lab address this challenge by fostering resource-sharing among universities. Whereas UniversiDATA is the foundational project (a shared open data portal for universities), UniversiDATA-Lab is a newer section of UniversiDATA devoted to publishing sample applications that compute the data and realise some of the potential value of the published datasets.

How does UniversiDATA-Lab create impact?

As a public–private collaboration initiated in 2020 by three public universities and the Spanish technology company DIMETRICAL, UniversiDATA is an open data portal for Spanish universities. It has expanded to include six public academic institutions. It manages the technical aspects of open data management, simplifying the process for universities to publish open data with minimal effort. Functional efforts are collaboratively distributed among participating universities when developing new datasets, significantly lowering barriers and encouraging widespread adoption of open data practices.

Due to the success of the sample static data analyses published (for example, this one or this one) via the UniversiDATA initiative, the six participating universities decided to go a step further and complement those static analyses with dynamic web applications that would read in real time the UniversiDATA catalogue, fetch all the currently available data and perform online data analysis.

Monitoring analyses, user interaction via comments and web activity reveals a noticeable increase in use, with significant visibility gained from national press coverage and recognition from relevant stakeholders in the public administration and the Spanish National Open Data Portal (datos.gob.es) newsletter. Moreover, the UniversiDATA solution is included in the Innovation Bank of the National Institute of Public Administration. Activities such as hosting an annual datathon (of which the second edition will be launched in mid-2024), visiting universities for classes, and students and teachers increasingly using university data for assignments are contributing to notable activity spikes. The data reuse for research is also increasing (in fact, one of the winning projects from the last datathon led to the publication of a research paper, 'The effect of COVID-19 on international student credit mobility: a gravity model approach'), but still, some teachers and researchers seeking information from university management are unaware it's already published on the platform. So again, to enhance its impact, garnering attention and support is crucial for the initiative to grow.

What has changed compared to last year?

Compared to the previous volume of the observatory, the biggest change is the transition from UniversiDATA-Lab being just an idea to a living project. Currently, there are three new data products (the Budget Explorer application, the COVID-19 impact on travels via expenses analysis and the Retirement Forecast application). When transitioning from an idea to reality, the team made some changes along the way. For example, initially, UniversiDATA-Lab was conceived as a separate portal from UniversiDATA, but it was ultimately decided to turn it into a section within the same portal and not a separate one. This decision allowed the team to offer a more coherent and integrated experience to its users.

UniversiDATA-Lab exerts considerable effort to convert inherently intricate data into user-friendly information and provides detailed documentation to help users understand the nature of the data being analysed. Take, for instance, the detailed university budgets, which constitute a large and complex data structure that can be challenging to comprehend and navigate for individuals unfamiliar with public accounting. To illustrate, tackling questions like 'How much money has University X spent on basic supplies (electricity, gas, water) in the last 5 years? How has the evolution been? What percentage of the total expenses do they represent? What percentage of total supply spending does it represent? Was more spent than initially budgeted?' using raw budget datasets is a complex task. In

contrast, answering the same question through the Budget Explorer application is a straightforward process, even for people unfamiliar with public budgets.

The team has also developed its own data-sharing licence (the UniversiDATA licence), as existing ones were not as complete as needed. There has been a significant focus on data anonymisation since universities decided to publish detailed information to maximise data value for reusers. The primary goal is to ensure proper anonymity, involving a highly technical and legally intricate task, including a thorough risk assessment and complex anonymisation processes, coupled with the licence explicitly prohibiting any intent to reverse anonymisation.

What are UniversiDATA-Lab's goals for the future?

The main goal for the future is to increase the number of published applications and analyses, expanding the catalogue to showcase greater variety and tangible impacts. The initiative aims to generate meaningful insights and demonstrate positive effects from the analyses conducted.

UniversiDATA-Lab emphasised raising awareness and equipping individuals with skills for utilising publicly available data with real-world analytic applications on published datasets. Organising an annual datathon encourages participants to showcase the best reuse cases of university data, with winning projects featured on the website. Despite the initial burden of organising a datathon, the success of the first edition led to plans for it to be an annual event, observing how reusers from various levels (students, researchers, professionals, etc.) used the data creatively to unleash its potential value.

VisImE-360: using open data to support and improve healthcare planning for visually impaired people

VisImE-360 in a nutshell

- **Service:** VisImE-360 explains Eurostat's data on visual impairment on a single informational website, helping to allocate resources for medical aid.
- **Sector:** health.
- **Country of origin:** Italy.
- **Data sources:** open data from Eurostat and research studies.
- **Number of employees:** 1.
- **Website:** vision.scientific-tools.org.

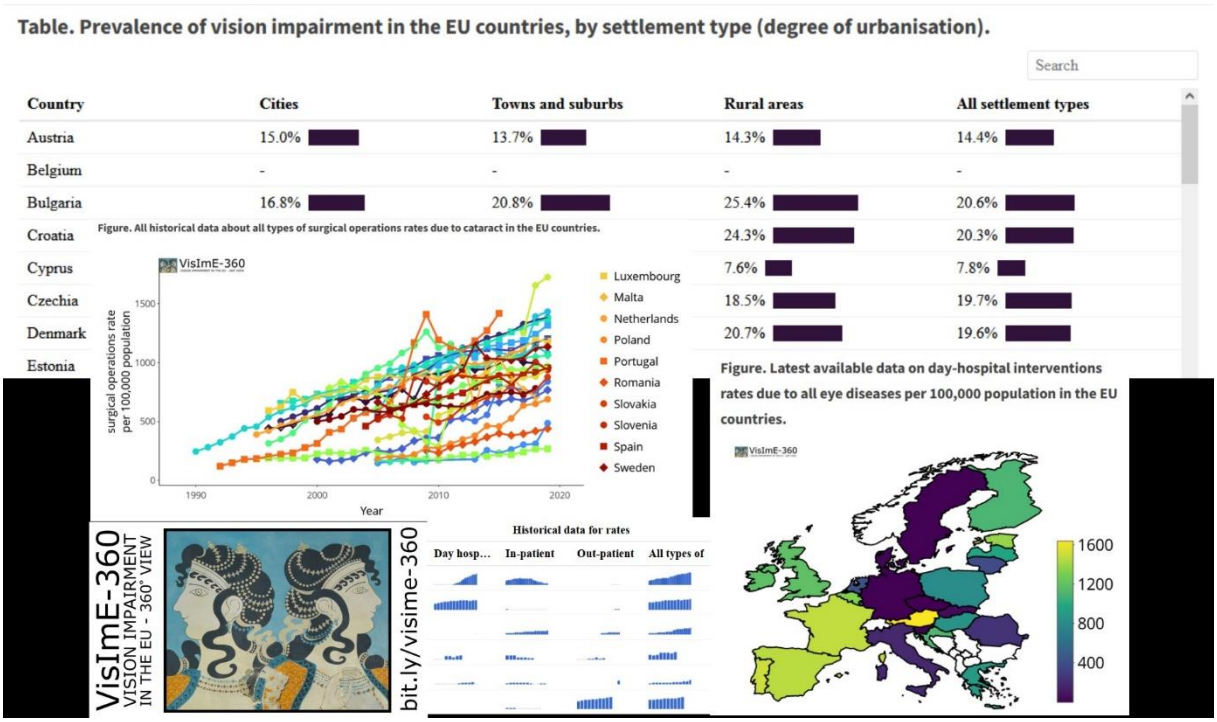

Figure 6: Snapshots of the VisImE-360 portal.

VisImE-360 (Vision Impairment in the EU-360° view) was created by the epidemiologist and data scientist, Boris Bikbov, who was driven by the idea to collect major data on a single informational website on a highly relevant condition that affects more than 75 million people in the EU. Boris used raw, open Eurostat data to produce easy-to-see text descriptions, visualisations and tables. The 2021 EU Datathon competition provided the right opportunity to develop a web application that summarises and presents data on visual impairment in the EU. Importantly, the application ultimately supports decision-makers in allocating resources to help people with visual impairment and facilitate the provision of the most appropriate medical aid.

How does VisImE-360 create impact?

VisImE-360 aims to create a significant impact by addressing visual impairment, a widespread health condition. The application has a twofold goal: raising awareness about visual impairment and providing support to various stakeholders, including policymakers, patient organisations, the media and social service workers. The content on the website is structured in two main sections.The first sections presents data on the prevalence of visual impairment across Member States, considering factors like urbanisation and education levels. The second section focuses on healthcare resources and utilisation, offering insights into the availability of ophthalmic surgeons, statistics on cataract treatment and hospital interventions. The application ensures accessibility for all users, including people with visual challenges, by providing customisable colour schemes and font features.

What has changed compared to last year?

Since its initial release in November 2021, VisImE-360 has maintained its active status and facilitates raising awareness about vision impairment in the EU. The project has a development plan with work packages focused on the inclusion of Eurostat data, scientific research studies and other open data

sources to provide accurate and insightful information. Boris Bikbov, the developer, underwent a comprehensive two-step process using the R computing environment to filter and prepare relevant datasets. A major update was initially planned for 2023; however, this did not happen due to a lack of funding to cover the time required for this work. Boris is actively seeking financial support to refine the application and enhance user engagement.

What are VisImE-360's goals for the future?

VisImE-360's goals are to develop further, be more refined and increase impact. The current focus is on overcoming barriers related to scalability and funding at both EU and national levels. Currently, available grant calls are mainly dedicated to big international consortia, while there is a shortage of grants to stimulate the implementation of initiatives like VisImE-360. The overarching objective of the application is to contribute to societal goals, emphasising the need for investment and resources.

Tangible Data: transforming data into tangible sculptures to educate society

Tangible Data in a nutshell

- **Service:** Tangible Data transforms data from its digital context into a physical context by creating data sculptures in the public space. These data sculptures help people that lack certain digital skills experience the data.
- **Sector:** culture.
- **Country of origin:** Spain.
- **Data sources:** open data from international bodies (e.g. National Aeronautics and Space Administration, The World Bank) and other platforms.
- **Number of employees:** 2 (not full-time).
- **Website:** www.tangibledata.xyz.

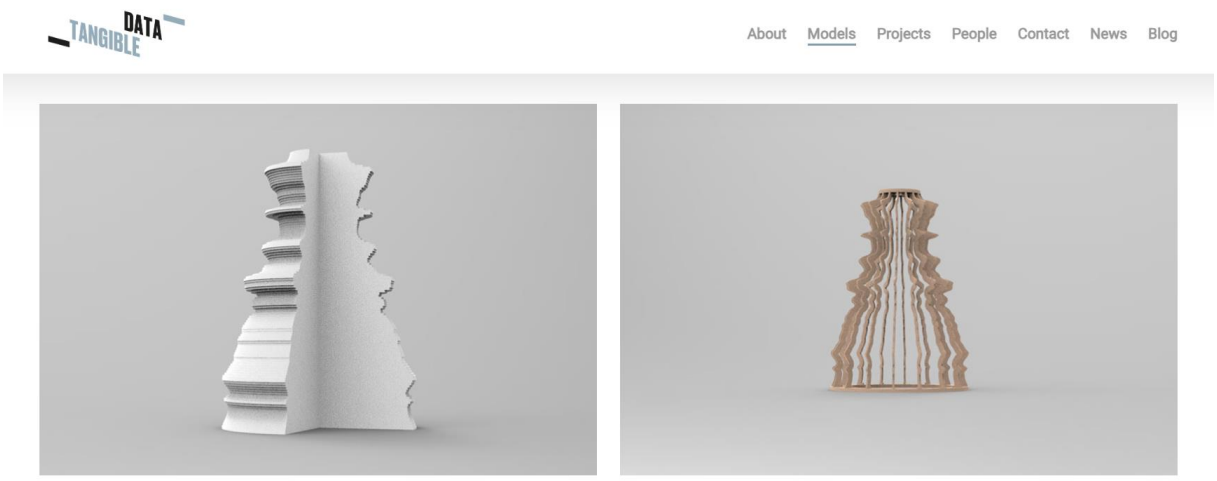

Figure 7: Snapshot of the Tangible Data website.

Tangible Data addresses the challenges of knowledge gaps and misinformation regarding the broader topic of sustainability by making data tangible. Through 3D printing and laser-cutting techniques, Tangible Data creates sculptures using open data, promoting accessibility and understanding. The sculptures visualise various topics, such as climate change, poverty reduction and trust in public institutions. Tangible Data aims to bridge digital divides, by reach non-digital audiences and educate people about global challenges. The impact is threefold: raising awareness, empowering communities through innovative data use and engaging individuals in sustainable solutions. The initiative plans to create large sculptures for public exhibitions, collaborate with organisations and seek funding for its impactful work. Visitors can purchase replicas of the sculptures, contributing to the represented cause and supporting Tangible Data's mission.

How does Tangible Data create impact?

Tangible Data employs a unique approach to make complex global challenges accessible through tangible sculptures. Utilising diverse datasets, including from the National Aeronautics and Space Association and the open data portal of France, the project focuses on climate, urbanisation and biodiversity. The Massachusetts Institute of Technology License is preferred for flexibility, fostering trust by crediting sources. Google Sheets is used for minimal data manipulation, maintaining the integrity of the information.

Each data sculpture is furnished with a QR code facilitating measurement within a conversion funnel. Within this funnel, an online store exists where replicas of data sculptures are available for purchase. The objective is to channel generated revenue into impactful projects, thereby achieving the overarching aim of translating data into meaningful action.

What has changed compared to last year?

Compared to the previous year, Tangible Data has evolved significantly. In 2023, the project moved from minimum viable product testing to delivering end-to-end projects. This has enabled the team to explore commercial and educational opportunities, such as exhibits, workshops and other requests. The four key processes (design, creation, delivery and measurement) were standardised and made the project globally accessible and quickly deployable.

The team successfully delivered three projects addressing challenges posed by the COVID-19 pandemic, primary education progress in Central America and climate change.

What are Tangible Data's goals for the future?

The goals of Tangible Data are ambitious. It envisions incorporating data sculptures into education, collaborating with schools globally and organising exhibitions in public spaces. The project aims to go beyond its niche, seeking partnerships with larger institutions, including museums and science centres. Tangible Data has plans for a marathon of creating hardware, involving people in the process, especially young people aged 13 to 14. The goal is to familiarise them with data, sustainability and various disciplines.

In the upcoming year, Tangible Data plans to exhibit large sculptures globally, seeking permission from cities like Madrid for public displays. The project aims to standardise its design and production model and increase collaborations with schools, making the project more accessible and impactful.

EU Twinnings: exploring similar regions across Europe with open data

EU Twinnings in a nutshell

- **Service:** EU Twinnings uses open data from Eurostat to make statistics accessible to a wider audience and show similarities across EU regions.
- **Sector:** society, European integration.
- **Country of origin:** United Kingdom.
- **Data sources:** open data from Eurostat and data.europa.eu.
- **Number of employees:** 1.
- **Website:** https://eu-twinnings.site.

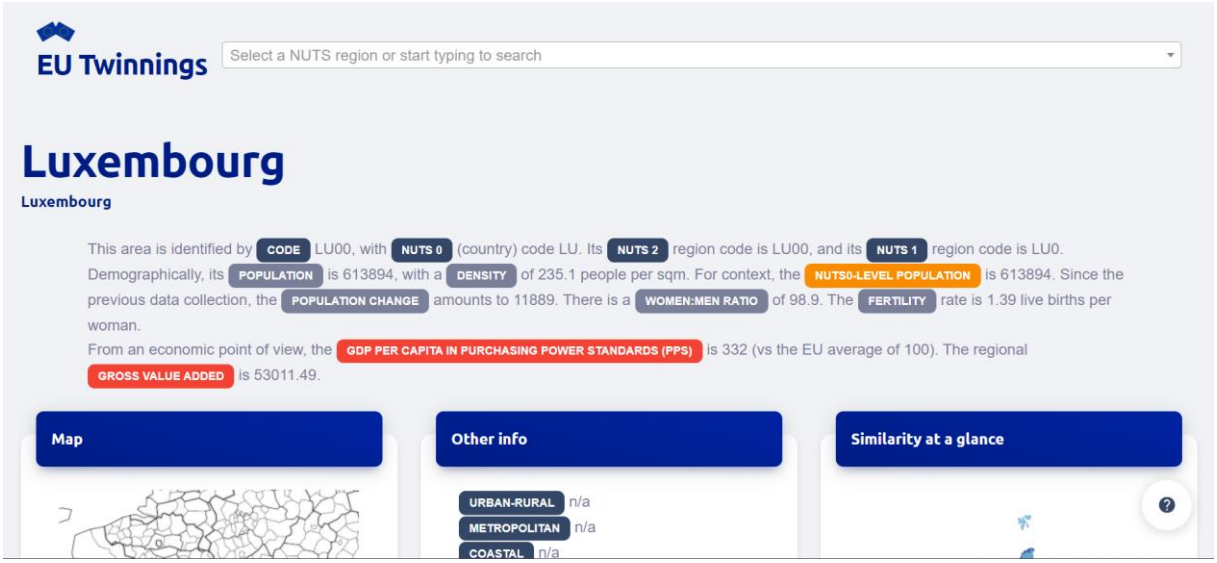

Figure 8: Snapshot of the EU Twinnings portal.

The EU Twinnings web application is an exploratory project aiming to make statistics and open data more accessible and understandable. The concept was inspired by an academic paper that measured the similarity between literature pieces. This idea was then translated into EU Twinnings, allowing users to explore and visualise Eurostat's statistics on EU regions and municipalities, comparing their similarities with others. The application relies solely on open data from Eurostat, with datasets categorised at both NUTS 2 (Nomenclature of Territorial Units for Statistics) and NUTS 3 levels. EU Twinnings prepares lists of demographic and socioeconomic parameters using the Eurostat JSON API for data retrieval, followed by cleaning and unit testing. While Eurostat provides extensive data, challenges arise when parameters are not uniformly available for all regions.

How does EU Twinnings create impact?

The application provides an interactive interface where users can select a specific area or municipality in the EU and visualise its similarity to other regions. The similarity is calculated using Eurostat's open data, covering parameters like population density, fertility, gender, gross domestic product and more. The formula, updated annually, determines the percentage of similarity between two regions based

on the chosen parameters. EU Twinnings also offers a rank comparison through spider charts, providing users with detailed insights into specific similarity highlights and across parameters.

Despite the non-commercial focus and privacy considerations, EU Twinnings has demonstrated qualitative impact, particularly during the 2020 EU Datathon, sparking interest and receiving suggestions for potential applications, such as within the Erasmus programme.

What has changed compared to last year?

Updates to the similarity formula and classifications are performed annually, ensuring that EU Twinnings remains up to date. However, adjustments to border areas and changes in table terminology still pose challenges for full automation.

Additionally, EU Twinnings has undergone a recent design revamp, and work is in progress on incorporating user feedback features, ensuring inclusivity and considering new definitions of similarity. There are plans to integrate data on tourism and criminality, potentially from non-open repositories, as sources for climate or academic data often lack the required granularity for EU Twinnings.

What are EU Twinnings' goals for the future?

One of the major challenges faced in scaling the initiative and making it sustainable is not having a business-oriented approach. To overcome this, EU Twinnings is liaising with larger organisations to incorporate its application into their portal. To ensure continuity, scalability and impact, EU Twinnings is actively working on the implementation of its initiative into a larger European web portal.

Open Food Facts: transforming food choices for health and the environment

Open Food Facts in a nutshell

- **Service:** Open Food Facts creates easy-to-understand information about the nutritional value and environmental impact of food and provides a large food product database containing over 3 million products.
- **Sector:** food, health.
- **Country of origin:** France.
- **Data sources:** open data from food producers and national and European sources.
- **Number of employees:** 7.
- **Website:** fr-en.openfoodfacts.org.

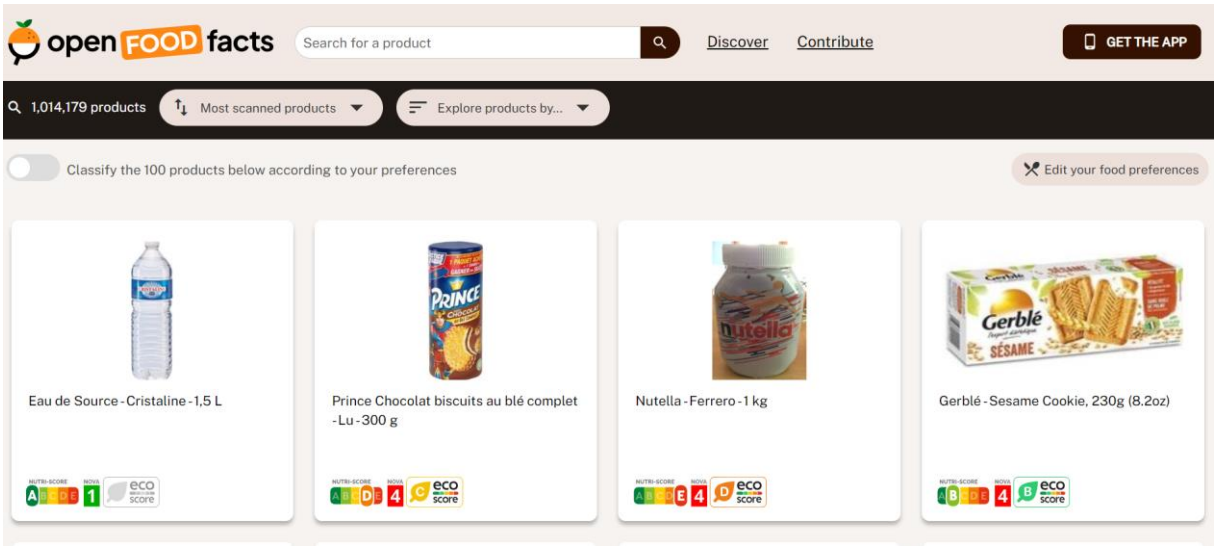

Figure 9: Snapshot of the Open Food Facts website.

Open Food Facts tackles the health and environmental impacts of food, offering the largest open food database with information on over 3 million global products. Through user contributions and collaboration with food producers like Nestlé, it simplifies nutritional, environmental and processing assessments via Nutri-Score, Eco-score and the Nova classification. Initially pro bono, it has secured grants, including the Google.org Impact Challenge. With 1 million products in France and 3 million globally, Open Food Facts aids consumers in better understanding ingredients, labels, origins, additives, etc. The Nutri-Score, widely adopted in France, exemplifies its influence. The ongoing Eco-score rollout, using data from open sources like Agribalyse, enhances its environmental impact assessment. Open Food Facts maintains openness, providing downloadable data, contributing to scientific research and supporting over 250 applications. Their impact extends to influencing food producers, fostering healthier choices and addressing environmental concerns.

How does Open Food Facts create impact?

Open Food Facts aims to create food transparency, allowing consumers to make informed and healthy choices. The platform focuses on providing information about the nutritional content and processing level of food products, empowering users to adapt their diet accordingly. The project has expanded its scope to include environmental considerations, addressing the increasing interest in the ecological impact of food choices. Open Food Facts engages a diverse audience, initially targeting health-conscious individuals and later expanding to include those interested in environmental issues related to food consumption.

What has changed compared to last year?

Over the past year, Open Food Facts has witnessed significant growth and development. The team has expanded to eight members, emphasising the project's professional approach. The platform's scope has broadened to cover not only food but also a wide range of products, leading to the initiation of the projects 'Open Beauty Facts' for cosmetics and 'Open Products Facts' for all other products. The project has gained increased attention and interest, with approximately 3 million unique visitors to the

website and application monthly. The platform has also enhanced its data quality efforts, implementing more than 180 data quality checkpoints to ensure accuracy and reliability.

What are Open Food Facts' goals for the future?

Open Food Facts has ambitious plans. The team aims to facilitate sustainable consumer behaviour by providing information on how to extend the life of products and reduce waste. Open Food Facts intends to improve its search engine, allowing users to filter results based on various criteria, similar to major e-commerce platforms. Challenges include managing the increasing interest in the project and addressing the time-consuming task of responding to diverse requests, ranging from consumers and scientists to journalists.

Open Food Facts currently receives funding from various sources, including the French Ministry of Health, philanthropic foundations, European projects and individual donations. The platform's success is evident in its wide-reaching impact, with over 600 scientific papers referencing the project. The team is proud of its achievements and is actively involved in discussions and partnerships to secure further funding and support.

Integreat: empowering municipalities with the integration of migrants and refugees

Integreat in a nutshell

- **Service:** Integreat is a digital platform that provides all the relevant information in several languages at the municipal level to newly arrived migrants and refugees.
- **Sector:** society, migration.
- **Country of origin:** Germany.
- **Data sources:** open data from national municipalities.
- **Number of employees:** 27–35.
- **Website:** integreat-app.de.

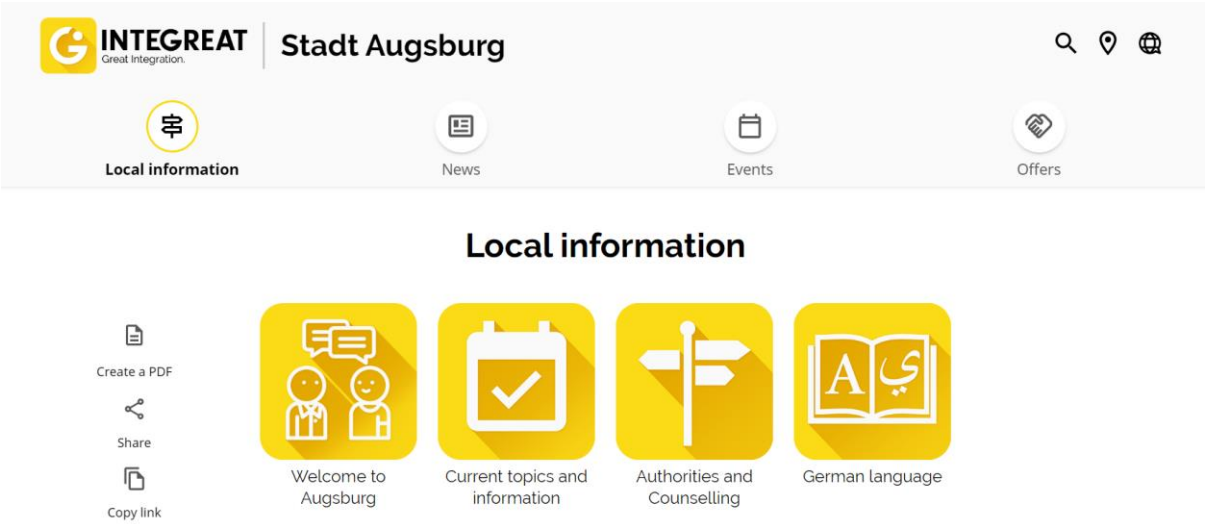

Figure 10: Snapshot of the Integreat website.

The Integreat initiative in Augsburg, Germany, aims to address the challenges faced by refugees and other newcomers when arriving in a new country, particularly informational and linguistic gaps. It has evolved into a comprehensive integration process tool, helping more than 100 municipalities in Germany. The initiative serves as both a tool for integration and an incentive for municipalities to gather key data.

How does Integreat create impact?

Integreat provides refugees and migrants access to essential information for settling and integration processes. The platform offers multilingual content on administrative processes, job opportunities, education, social services and relevant updates on topics like COVID-19 and the war in Ukraine. Accessible through the application, website or offline brochures, Integreat collaborates closely with municipalities and experts to maintain accurate and up-to-date data. The initiative supports the integration process, making information available in various languages and facilitating collaboration between municipalities.

The impact of Integreat is measured through user numbers, evaluations with municipalities and ongoing studies, such as the randomised control trial funded by the Abdul Latif Jameel Poverty Action Lab Europe, among others. The purpose of data collection and analyses is to provide German municipalities with important insights that allow them to improve integration and information services for immigrants and to optimally adapt them to their needs. The first results have been gathered and will be validated in a larger-scale study starting in the autumn of 2023, providing valuable insights into the initiative's impact on end users.

What has changed compared to last year?

Since the previous year, Integreat has expanded its services to 108 partner municipalities in Germany, primarily in Bavaria, North Rhine-Westphalia and Hessen. The initiative has successfully sustained positive relationships with municipalities, with minimal cancellations, highlighting its impact. While initially supported by public funding, municipalities are now required to pay an annual fee of EUR 4 000 to EUR 41 500, according to the size of the municipality, since the autumn of 2023. The team actively

seeks qualitative feedback from municipalities through annual surveys, reinforcing its collaboration and distinguishing itself in the market.

What are Integreat's goals for the future?

Integreat's commitment to open data remains strong, with the entire programme and source code freely available under an open-source MIT License. All content from municipalities is licensed under Creative Commons (CC BY 4.0), promoting collaboration and minimising workload. The initiative plans to enhance its platform by improving automatic translations, integrating with other local organisations' websites, piloting a chatbot, facilitating job searches for migrants and exploring opportunities to scale beyond Germany, as formerly tested in Greece.

3.4. Environmental impact

Digital Dryads: using open satellite imagery to protect forests from illegal deforestation

Digital Dryads in a nutshell

- **Service:** Digital Dryads' application aims to protect forests from illegal deforestation in Europe by combining aerial and multispectral satellite imagery.
- **Sector:** environment, forest.
- **Country of origin:** Romania.
- **Data sources:** open geodata and multispectrum data from several EU open sources.
- **Number of employees:** 5.
- **Website:** digital-dryads.eu.

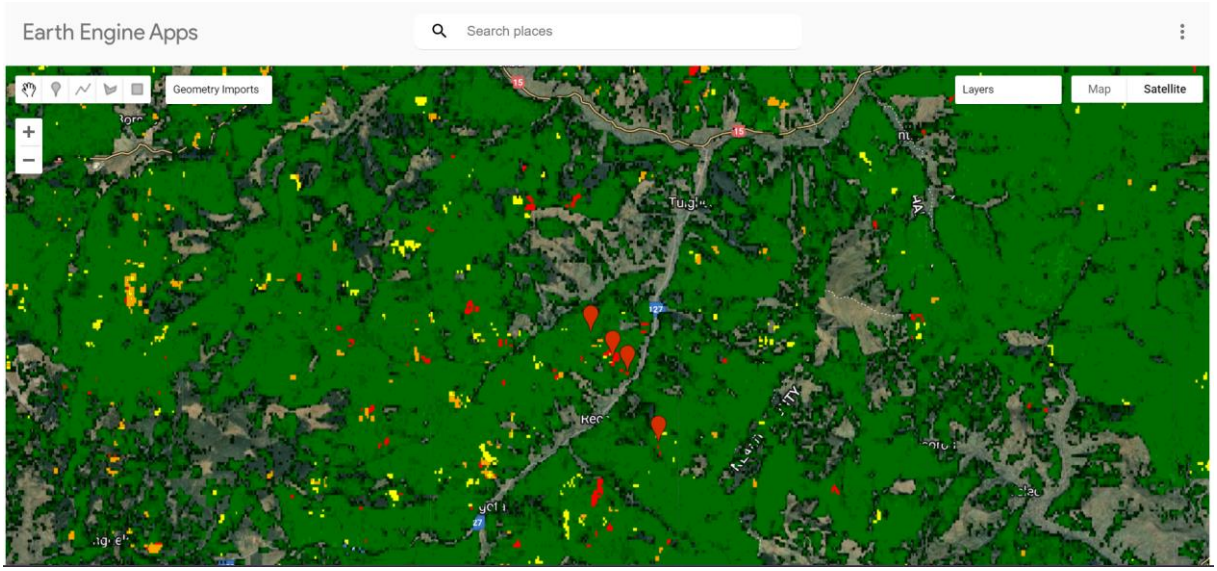

Figure 11: Snapshot of the Digital Dryads website.

Digital Dryads stands as a pioneering initiative in the fight against deforestation, combining technological innovation with environmental conservation. While facing challenges, the team's commitment to expanding services and promoting sustainable forestry practices remains unwavering, marking a significant step towards addressing the urgent issue of deforestation in Europe.

Digital Dryads emerged from the 2020 EU Datathon. Leveraging data from EU sources like Copernicus, Eurostat, Protected Planet and Google Earth for visualisation, the initiative aimed to combat deforestation by creating an application that visualises an interactive map to distinguish illegal activities from legal cutting across European countries.

How does Digital Dryads create impact?

Digital Dryads, now known for its contribution to combating deforestation, was initially created to empower the forestry industry. The interactive map visualises deforestation territories, distinguishing between legal and illegal activities with red (forest loss) and yellow (legal paperwork exists) dots. The initiative covers several European countries, including Albania, Belgium, Bulgaria, Croatia, France, Germany, Greece, Hungary, Italy, Romania and Spain.

What has changed compared to last year?

Since its inception, Digital Dryads has evolved in its scope and impact. The initiative helps law enforcement authorities and ministries analyse deforestation effectively. It allows users to observe forest coverage, areas of deforestation (red), protected forests (green), legal deforestation (yellow dots) and illegal action (red dots) on the interactive map. Despite facing challenges, such as the absence of data updates since 2019 due to resource limitations, the initiative has achieved notable recognition. This acknowledgement is particularly evident in the actions of the Romanian government, which has unveiled plans to launch a project mirroring the objectives of Digital Dryads. This initiative aims to utilise EU financial resources for implementation, although it does not attribute recognition to the original Digital Dryads project. This development underscores the significant impact and inspiration derived from Digital Dryads, even in the face of operational constraints.

Digital Dryads has a loyal group of users, which illustrates the success of the application. It also inspired the Romanian government to build a similar tool. While lacking economic support for updates, the application has prompted collaboration requests and inspired projects like the *Wood Watcher* application. Recognition at Rosewood project, where the team received the Best Practice in Europe award, further solidifies the initiative's impact on combating deforestation.

What are Digital Dryads' goals for the future?

Looking forward, Digital Dryads aims to introduce a commercial aspect, making forest monitoring a subscription-based service for companies. This shift is crucial for sustainability and growth, enabling the initiative to expand its services and address a broader range of challenges within the forestry industry.

Digital Dryads utilises a mix of open and non-open data. The team supplements this with lobbying efforts to obtain non-public data, particularly information on the legality of deforestation. The application's impact is measured both quantitatively and qualitatively, with 800 to 1 200 monthly

users, primarily accessed via browser on a desktop. Despite financial constraints, the initiative succeeded in raising awareness about deforestation and spawned additional projects like the application *Wood Watcher*. This application calculates woodpile volumes from user-submitted photos, aiding law enforcement against illegal wood trafficking. Creating more use cases to commercialise is one of the goals for this initiative's growth.

Air Quality in Cyprus: informing residents about air pollution across the island

Air Quality in Cyprus in a nutshell

- **Service:** Air Quality in Cyprus provides residents with real time information about several forms of air pollution. Users can find the data online or choose to be proactively informed about certain substances via the applicationon their smartphone.
- **Sector:** health, environment.
- **Country of origin:** Cyprus.
- **Data sources:** open data from national air pollution measurement stations.
- **Number of employees:** 5–10.
- **Website:** www.airquality.dli.mlsi.gov.cy.

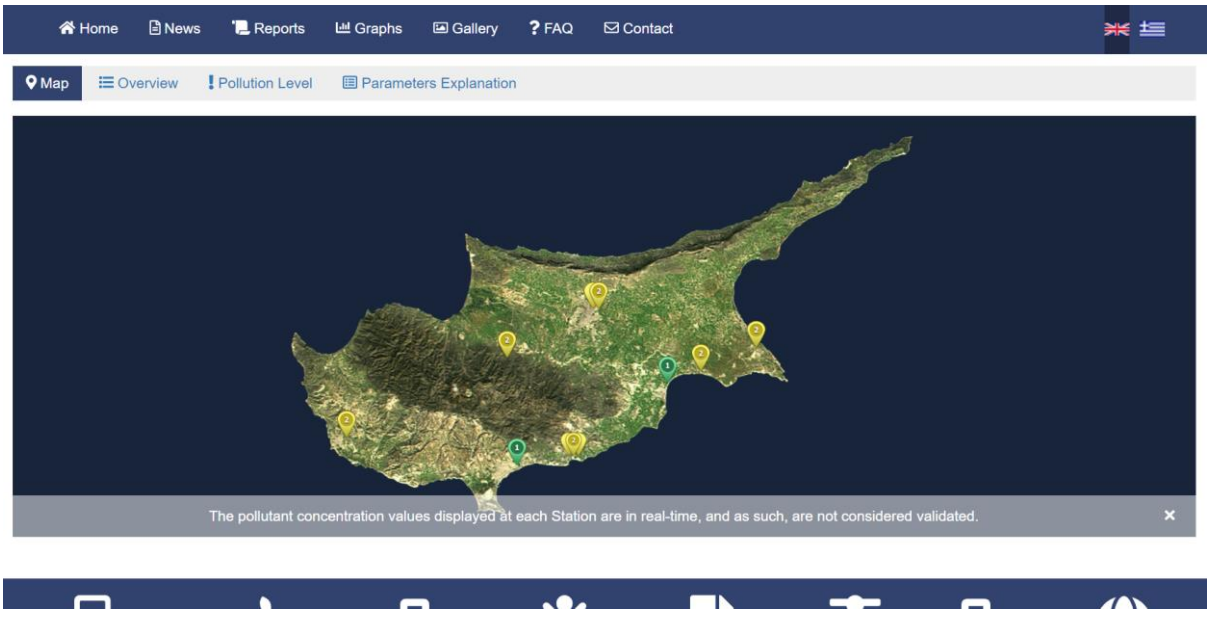

Figure 12: Snapshot of the Air Quality in Cyprus website.

Air Quality in Cyprus, managed by the Department of Labour Inspection of the Ministry of Labour and Social Insurance, offers services through its website and mobile applications for Android and iOS. The platform provides real-time data from nine air pollution measurement stations across Cyprus, displaying pollutant concentrations, associated health risks and colour-coded indicators for user-

friendly interpretation. Notifications alert mobile users when pollutant concentrations reach safety thresholds in their chosen areas.

How does Air Quality in Cyprus create impact?

The monitoring of air quality in Cyprus, aligned with an EU directive, contributes significantly to public awareness and safety, addressing the potential health hazards posed by air pollution. Air pollution can lead to respiratory problems, allergies and adverse neurological, reproductive and developmental effects, especially impacting sensitive populations such as children, older people, pregnant women and those with heart or lung diseases. In Cyprus, air pollution results from various sources, including transportation, industry, agriculture and wind-blown dust from large desert areas like the Sahara, Arabian and Syrian deserts.

The Air Quality in Cyprus application and website provide real-time data from the nine air quality monitoring stations across the Member State, helping users understand the impact of specific pollutants on their health. Note that the data is validated after instant publication on Air Quality in Cyprus; otherwise, real-time information provision would not be possible. Still, users gain a lot from unvalidated real-time information since it is often a reliable estimate of validated measurements.

During events like dust storms, the Department of Labour Inspection issues announcements to the public, schools and specific groups, offering advice to minimise exposure.

The Air Quality in Cyprus application and website offer information on various forms and sources of air pollution, health effects, advice on improving air quality and an overview of existing legislation to prevent air pollution. With over 800 000 unique visitors annually and approximately 10 000 users each for the iOS and Android applications, the initiative actively contributes to preventing adverse health effects of air pollution in Cyprus. The data is also available on the Cypriot open data portal (www.data.gov.cy) for anyone who is interested in this field (universities, environmental companies, schools, etc.).

The project's impact is realised through its role in preventing adverse health effects and prompting government alerts during critical pollution levels. Plans involve creating a forecasting tool, necessitating collaboration with other organisations for comprehensive (open) data integration.

What has changed compared to last year?

The air quality in Cyprus continues to evolve, emphasising the importance of forecasting tools to predict pollution concentrations accurately. Despite challenges, including concerns about the potential for alarm from inaccurate forecasts, the team is incrementally improving the forecasting system. Internal advancements may not be fully visible externally, but ongoing efforts focus on refining the system and maintaining high-quality data.

What are Air Quality in Cyprus's goals for the future?

Goals for the future include the development of a dedicated forecasting section on the website, aiming for precision without causing unnecessary alarm. The team acknowledges the importance of using (open) data from other organisations, such as meteorological institutes, for accurate forecasting. The

initiative remains committed to continuous improvement, striving to reduce costs and enhance real-time forecast accuracy.

Planttes: improving lives through pollen awareness

Planttes in a nutshell

- **Service:** Planttes is a citizen-science application that informs users about which plants are in bloom and whether this might affect people with pollen allergies.
- **Sector:** environment, health.
- **Country of origin:** Spain.
- **Data sources:** open data from the Point of Information on Aerobiology and open geodata
- **Number of employees:** 2, with the help of students.
- **Website:** www.planttes.com.

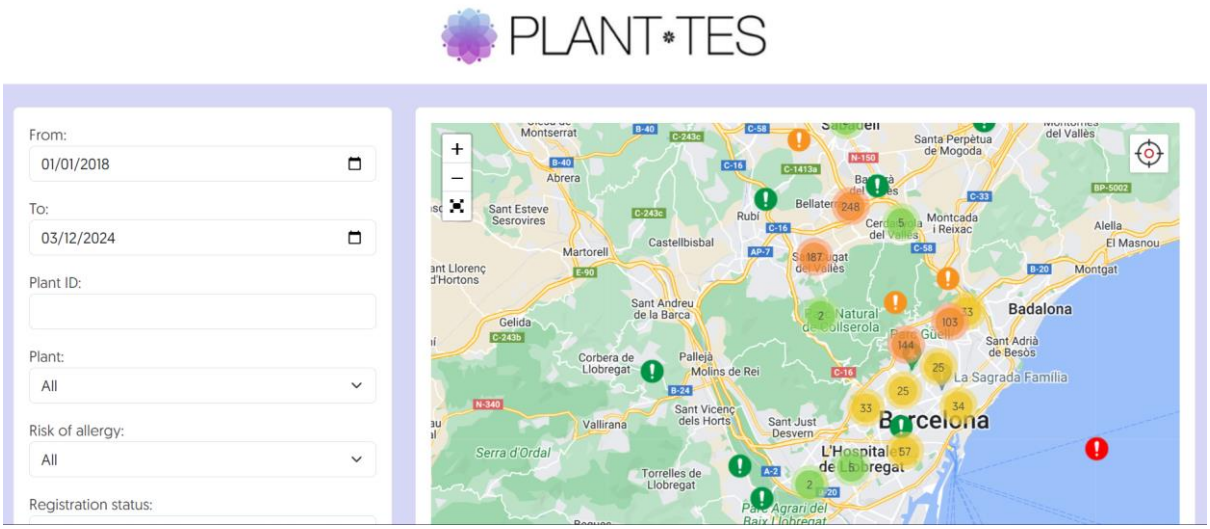

Figure 13: Snapshot of the Planttes website.

The Planttes initiative addresses the issue of pollen allergies by providing precise information on allergenic plants' blooming status. Since its inception as a citizen-science project, Planttes has grown, engaging residents in scientific projects relating to aerobiology. The primary goal is to understand the interplay between the environment, allergic diseases and climate change, contributing to enhanced quality of life for allergy sufferers.

Planttes stands as a testament to the power of citizen science in addressing environmental and health challenges. By leveraging community involvement and technology, the initiative has made meaningful strides in understanding and mitigating the impact of pollen allergies, with a commitment to fostering awareness and education in the years to come.

How does Planttes create impact?

Planttes empowers users by offering information on allergenic plants in their surroundings. Through an application, users contribute to building a map of plants' phenological states, indicating whether they have closed flowers, open flowers or fruit. This crowdsourced data aids in creating a personalised risk map for users, classifying allergenic risk into categories. By involving individuals in data collection, Planttes bridges the gap between scientific research and real-world impact, fostering awareness and understanding of allergy triggers. The application has been downloaded over 1 000 times, demonstrating its impact in reaching and helping users.

What has changed compared to last year?

Over the years, Planttes has evolved, shifting from a mobile application to a web application to enhance accessibility. The transition is aimed at making it easier for users to engage with the platform without the constraints of mobile applications. Additionally, Planttes continues its collaboration with schools, with plans to expand its outreach in 2024. The initiative's focus on educating students about allergenic plants and involving them in data collection remains a core strategy for sustained impact.

What are Planttes' goals for the future?

Looking ahead, Planttes aims to make further strides in educating students and involving more schools in data collection efforts. The initiative plans to leverage web applications to facilitate data collection and analysis, making it more accessible to a broader audience. The ultimate goal is to cover a more extensive territory and increase Planttes' impact by incorporating ground-level, citizen-contributed data to complement existing pollen information systems. By continuing to improve accessibility and engagement, Planttes aspires to enhance its role in allergy awareness and scientific research.

Environ-Mate: empowering kids with knowledge about climate change

Environ-Mate in a nutshell

- **Service:** Environ-Mate is an interactive platform to empower children with knowledge about climate change based on scientific data.
- **Sector:** environment, climate.
- **Country of origin:** Germany.
- **Data sources:** open data from EU and international bodies (e.g. Eurostat, European Economic Area, National Oceanic and Atmospheric Administration).
- **Number of employees:** 2.
- **Website:** environ-mate.feld-m.de.

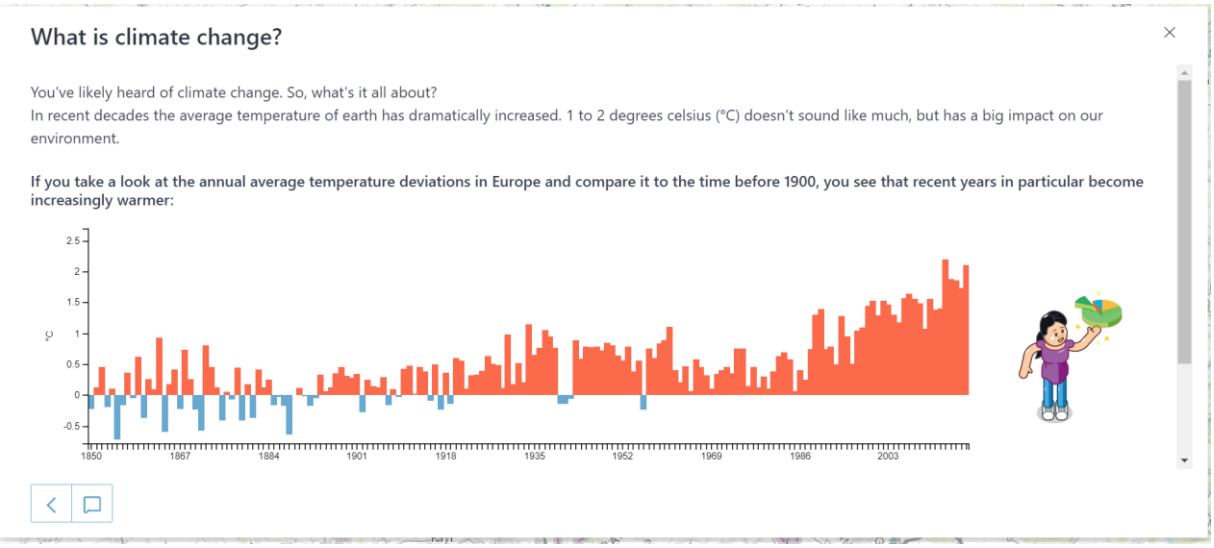

Figure 14: Snapshot of the Environ-Mate website.

Environ-Mate aims to educate children aged 10 to 14 about climate change and inspire activism. Using open data from the European Economic Area, the National Oceanic and Atmospheric Administration, Eurostat, Copernicus and the Centre for Research on the Epidemiology of Disasters, it offers an interactive platform guiding users through climate change statistics, greenhouse emissions, regional comparisons, consequences and individual preventive action. Environ-Mate promotes learning and acting, relying on open data for accurate insights. While the platform lacks tracking due to privacy concerns for its young audience, qualitative surveys indicate positive feedback. Future plans involve school testing, a climate expert audit, enhanced accessibility, expanded content and multilingual support, which are contingent on team resources and commitments. In the initial stage of development, the whole Environ-Mate team worked at FELD M, a German consultancy for data-driven marketing.

How does Environ-Mate create impact?

Environ-Mate aims to address the lack of information and misinformation regarding climate change and environmental issues. The platform targets a diverse audience, including children, providing a user-friendly experience through features like an assistant (Eliot for German, Linda for English). By offering accessible information, Environ-Mate aims to empower users to understand the impact of climate change, make informed decisions and contribute to the ongoing conversation. The platform focuses on countering misinformation and fostering a better understanding of environmental data.

What has changed compared to last year?

Environ-Mate has seen several changes and developments since its inception in 2019. The team, initially consisting of a few individuals, has maintained its core members. Despite minimal updates and promotion, the platform has maintained its presence. The focus has shifted towards other projects, such as biodiversity, climate conferences and 'data for good' initiatives. The challenges of maintaining momentum and engaging with the target audience, particularly in schools, have been recognised. However, the team has not actively tracked or promoted Environ-Mate, leading to a slower pace of updates.

What are Environ-Mate's goals for the future?

Looking ahead, Environ-Mate aims to enhance its impact by modifying its storytelling approach. The project plans to incorporate a broader range of narratives, blending political perspectives with insights from various industries.

The Environ-Mate team emphasised the importance of sustainability and scalability, acknowledging the challenges associated with maintaining such initiatives. The project seeks to engage developers, business professionals and a wider audience by exploring potential collaborations with established open-learning platforms. Despite uncertainties in funding, Environ-Mate remains committed to its long-term viability, emphasising the need to continuously update and keep the project relevant. Ongoing efforts include potential partnerships and increased outreach to ensure the initiative's continued success.

4. Takeaways from the four dimensions

Economic impact: leveraging open data for economic growth

The economic impact of open data initiatives is exemplified by Naar Jobs West-Vlaanderen, which successfully utilised open data to provide information on transport options. By providing entrepreneurs and small-business owners with accessible information, the initiative facilitated informed decision-making, leading to increased business resilience and success. This demonstrates the potential of open data in fostering economic development, job creation and entrepreneurship.

The lesson learned here is that open data initiatives can play an important role in supporting economic ecosystems by empowering businesses with valuable insights, promoting innovation and contributing to overall economic resilience.

Governmental impact: enhancing decision-making and accountability

Both the Waar is mijn stemlokaal? and the Statsregnskapet.no use cases showcase how governments can harness the power of open data to enhance decision-making and accountability. These initiatives emphasise the importance of government transparency, enabling citizens to access and understand public data.

The lesson learned is that open data fosters trust in government by providing visibility into operations and facilitating data-driven policymaking. Governments can leverage open data to increase efficiency, respond to public needs and uphold accountability, ultimately leading to more effective and responsive governance.

Social impact: fostering collaboration, inclusion and improved public services

The six use cases within the social dimension highlight the social impact of open data initiatives, emphasising their role in fostering collaboration, inclusion and improved public services. In Spain, the

UniversiDATA-Lab initiative demonstrates how universities can overcome resource challenges through collaborative open data practices, promoting accessibility and knowledge sharing. VisImE-360 contributes to social impact by addressing a widespread health condition, visual impairment, and providing valuable information to decision-makers, benefiting a large population in the EU. Tangible Data creatively bridges digital divides by engaging non-digital audiences and educating people on global challenges through tangible data sculptures. EU Twinnings makes statistics more accessible, empowering users to explore and visualise Eurostat's data and promoting data literacy and understanding. Open Food Facts addresses health and environmental impacts, providing a valuable resource for consumers to make informed choices. Integreat focuses on integration and information services for refugees, showcasing how open data can contribute to social cohesion and support vulnerable populations.

These cases collectively highlight the transformative social impact of open data initiatives, ranging from education and accessibility to inclusivity and support for diverse communities.

Environmental impact: bridging technology and conservation

The four use cases within the environmental dimension illustrate the impact open data can have by creating valuable insights about the environment. Air Quality in Cyprus exemplifies how open data can contribute to environmental conservation by providing real-time information on air pollution, which contributes to public awareness and safety. Digital Dryads creatively addresses deforestation by visualising an interactive map, showcasing the potential of open data in conservation efforts. Planttes utilises citizen science to understand the interplay between the environment, allergic diseases and climate change, contributing to a better quality of life for allergy sufferers.

The lesson learned from these environmental cases is that open data can serve as a powerful tool in bridging technology and conservation efforts. By making environmental data accessible and actionable, these initiatives contribute to addressing urgent environmental challenges and fostering a greater understanding of the interconnectedness between human activities and the natural world.

5. Conclusion

The Use Case Observatory research project was initiated to support data.europa.eu's broader mission of measuring the economic impact of open data across Europe from 2022 to 2025. In this second volume of the observatory, 13 reuse cases were monitored to assess how impact is created with open data, to share challenges and achievements of open data reuse cases and to add to the debate on an open data impact assessment methodology. By doing so, this volume contributes to answering three research questions central to this multi-year project.

- What is the economic, governmental, social and environmental impact of open data for the specific reuse cases collected?
- How important is it to keep track of such reuse cases to understand and foster value creation through open data in Europe?

- What else can be learned from the analysed reuse cases to improve open data measurement and implementation across Europe?

Although it is difficult to estimate something like impact, the interviews with contacts of the reuse cases clearly show the myriad of ways in which open data reuse cases have an impact. With open data, people are helped to find jobs close to them. Also, users are supported in their journey of finding a suitable polling station, and citizens can better understand how their Members of Parliament and their government operate through improved transparency. Children are empowered with knowledge about climate change. Also, through the reuse of open data, people are informed about pollen in the air.

During each interview, the participants were asked about their forthcoming plans for sustained impact. The responses spanned a spectrum, from minor adjustments to ambitious aspirations. Nevertheless, a shared challenge, irrespective of the scale of the plans, appears to be securing suitable investment. While procuring resources for the initial creation of a reuse case or a prototype is manageable, securing funding for scaling the reuse case presents a more intricate challenge. Consequently, several use cases have encountered hurdles in advancing their initiatives.

The second volume of *The Use Case Observatory* underscores the potential of open data reuse, emphasising that many organisations and applications owe their existence to open data. However, it also signals the necessity for unlocking more of open data's potential impact on the economy, government, society and the environment. To achieve this, ongoing support for the reuse community is crucial for identifying financial growth opportunities. Simultaneously, a deeper understanding of how to create and measure open data's impact is essential.

Annex I – List of interviewees

No	Reuse case name	Interviewee	Contact
1	Waar is mijn stemlokaal?	Tim Vos-Goedhart	tim@openstate.eu
2	Statsregnkapet.no	John André Jakobsen	john.andre.jakobsen@dfo.no
3	UniversiDATA-Lab	Juan Jesús Alcolea Picazo	jjalcolea@dimetrical.es
4	ViSimE-360	Boris Bikbov	boris.bikbov@gmail.com
5	Tangible Data	Antonio Moneo	antoniomoneo@gmail.com
6	EU Twinnings	Giuseppe Sollazzo	puntofisso@gmail.com
7	Open Food Facts	Manon Corneille	manon@openfoodfacts.org
8	Integreat	Clara Barcklo	bracklo@integreat-app.de
9	Digital Dryads	Razvan Pistolea	razvan+europa@digital-dryads.eu
10	Air Quality in Cyprus	Chrysanthos Savvides	csavvides@dli.mlsi.gov.cy
11	Planttes	Jordina Belmonte Soler	jordina.belmonte@uab.cat
12	Environ-Mate	Alexander Merdian-Tarko	alexander.merdian-tarko@posteo.de
13	Naar Jobs West-Vlaanderen	Han Tambuyzer	han@nazka.be

Annex II – Indicative interview questions

Can you briefly describe the changes in the **idea** behind your use case since last year?

- What is its purpose? What is its target audience? What size is the team?

Can you briefly describe the changes/additions in the **data** that was used for creating *x*?

- Is your initiative only based on publicly accessible data (open data)?
- If not, which other data sources were consulted?
- Where did you find the (open) data?
- What is its licence?
- How do you process open data? Any cleansing, structuring, manipulations or modelling techniques?
- Would it have been possible to develop your initiative without open data? If not, why?

Can you briefly describe the **impact** that *x* is having on its audience, with respect to its purpose?

- Do you still monitor the performance of your website? For example, do you know the number of daily/monthly active users?
- Do you regularly collect feedback from users? Is this feedback proving a general satisfaction of users with the website?
- How has *x* been developing since your win/participation in the EU Datathon of 2020?
- How do you plan to further develop over the next 2 years? Is there any ambition or business projection that you would like to share with us?

What are the biggest achievements in terms of **impact** since the previous interview?

- Bigger reach? Publicity? Promotion?

What are the biggest challenges while working with open data?

- Technical issues? Compatibility issues? Anything else?

Is there any **further information** that you would like to share with us?

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