LNDS

ANNUAL REPORT 2023

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Message from the Board

LNDS has been created by the Luxembourg government, to implement Luxembourg's strategies in research, innovation, and digitalisation. The economic interest group, PNED G.I.E. (Plateforme Nationale d'Échange de Données), has been created in July 2022. Furthermore, its brand Luxembourg National Data Service, or LNDS, was built to better respond to the mission of this newly created organisation.

The organisation is led by a Board, including representatives from six ministries and two public research institutes. The Board drives the interest of the entire government, covering all administrations and sectors in our society. Whereas an initial priority was set in the health, social and energy domain, we have been happy to see that LNDS is already collaborating with partners in various other sectors.

The year 2023 showed large footsteps ahead in the growth of its operations aligned with the performance indicators set in the convention. LNDS fulfilled its recruitment plan, growing into an organisation with 34 employees, across the different areas of expertise. By the end of 2023, this team demonstrated the development of a service portfolio, technical tooling and pilot-projects to the public during its inaugural Launch Event on 4 December 2023.

We expect LNDS to make impact here locally in Luxembourg, for our country. In addition, we expect LNDS to participate in the international economy, supporting European data spaces, and creating export opportunities for the Luxembourgish innovation and research ecosystem.

Romain Martin
Chairman of the Board
of Directors

Welcome

Welcome to our first annual report!
We are happy to introduce you to our initial achievements and our financial results. We will focus on the fiscal year 2023, with some notes on our start-up phase late 2022 as well as some status updates and outlook on 2024.

Who we are - creation history

The primary mission of Luxembourg National Data Service (LNDS) is to serve our data partners, to support research, innovation and policy making through high quality data and to enable participation of both public an private actors in the complete value-creating chain of data.

In 2023 we came to a cruising speed, after the creation of the legal entity* in July 2022 and the first onboarding of employees in November 2022. This progress was demonstrated and celebrated on 4 December 2023 with a formal launch event and the first edition of our signature event, the Data Summit Luxembourg.

We create services, tools, infrastructure

In our first full year we started to develop a rich portfolio of data enabling services and a suite of supportive tooling and infrastructure. We launched ten initial services and five software tools into production, at a "minimum viable product" level. All services and tools were co-created with data partners through concrete data projects, enabling validation in real-use environments. In 2024 we will further develop the services and tools according to their respective roadmaps, alongside new additions to this initial portfolio.

Projects to create impact

Whereas we devote half of our resources to the development of these capabilities, we allocate the other half to concrete data projects, with a focus on creating societal impact. Data projects are identified, scoped and prioritised with our various data partners, in a broad variety of domains. Seven projects were presented at the Data Summit Luxembourg, demonstrating the broad variety of challenges at hand: data governance and data management, data cataloguing, data analytics, data visualisation, and more.

In addition, we participate in a multitude of internationally funded projects, primarily through the European Commission. These projects provide us with a great network and knowledge access, through collaboration with renowned partners in various consortia. The internationally funded projects also provide platforms for international collaboration and co-creation. Most of these international projects are 50% funded, some even 100%, which brings additional funding to Luxembourg.

Legal basis

LNDS contributed to a project of law, to implement the European Data Governance Act into Luxembourg. This regulation stipulates a broad set of services, to equip the public sector with the necessary governance and tools to enable secondary use of public sector data. Together with other governmental partners, we prepare to provide several of these tools and services, including secure processing environments, pseudonymisation/anonymisation tools, and data access request support.

Our people - our main asset

Our team is very diverse and experienced in the various data-centric specialties, with background from the public and private sector as well as research. We run the organisation in a very flat and agile structure. Our culture is based on our values - trustable, thriving and transparent -, as a basis to grow confidence with our data partners and in the public domain. Furthermore, we do not limit our developments to our local staff, but we constantly look for opportunities to outsource or to partner with external parties.

A look into the future

Looking forward, we will continue to develop and expand our support to a growing set of impactful data projects, targeting fifty by the end of 2024. The results of at least ten of the projects will be presented at our annual signature event - Data Summit Luxembourg, on 11 December 2024. That is a great and ambitious challenge to have.
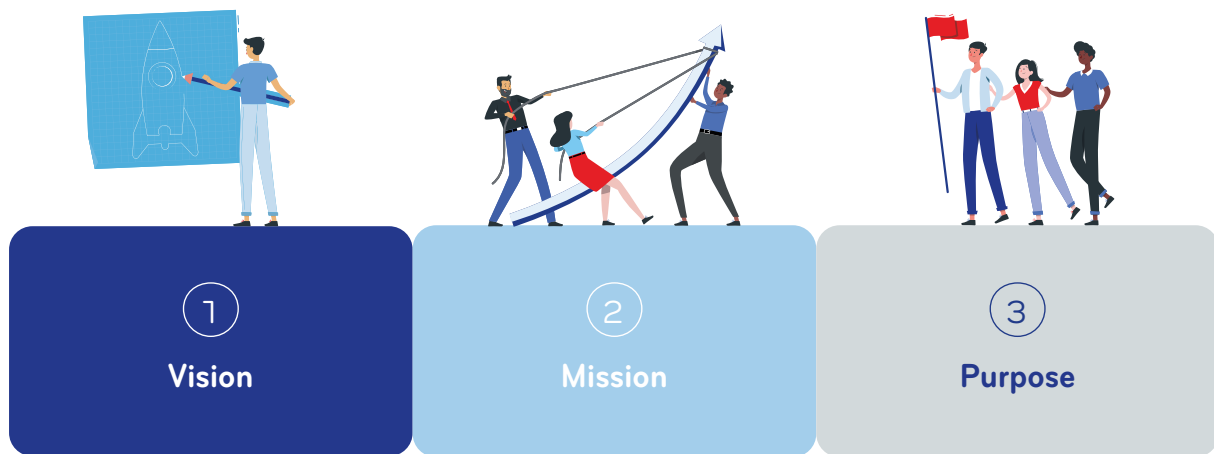

Thank you for reading this annual report and please reach out with your feedback, questions or suggestions for collaboration.

Bert Verdonck
CEO

Vision, Mission, Purpose & Values

1	2	3
Vision	**Mission**	**Purpose**

Our vision – to make Luxembourg the European innovation leader towards a responsible digital society

In our vision, Luxembourg is the European innovation leader towards a responsible digital society. Luxembourg's economic, ecological, and societal transitions can accelerate in more intelligent ways through efficient and responsible use of data.

In cooperation with other governmental administrations and institutes, we will be a major building block in Luxembourg's digital transformation and a leader of data spaces in Europe. Improving interoperability of data across sectors will help Luxembourg reaching its aim to become a sustainable, knowledge-driven, diverse and trusted digital society by 2030.

Our mission – to support research & innovation through high quality data

Our mission is to support research, innovation, and policy making with high quality data. Through building our service portfolio we support research and innovation for our partners, and joint development of the next generation of data products. We serve public administration, public research and private actors, to support them with the processing of data throughout the data journey.

We work in a national and international context, with an open eye on the world. Within Luxembourg we work as a connecting component and contributor to Luxembourg's digital strategy. Through strong collaboration between national organisations and institutions, including government, industry, research and citizens, we support organisations to make an impact through data, together. On the European level, we are involved in various initiatives, to contribute our knowledge, to learn from others and to attract funding.
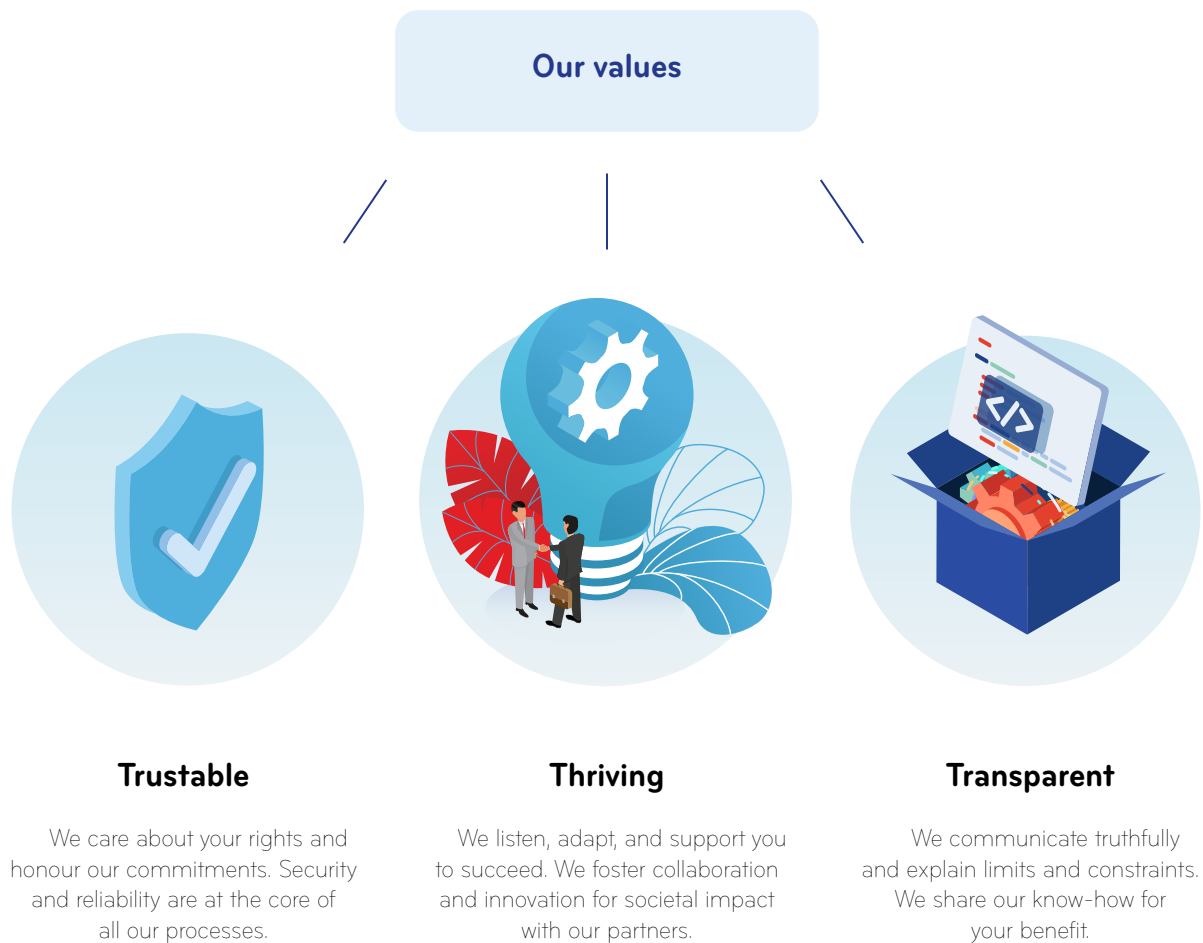
Our purpose – Enabling value creation from secondary use of data – with transparency, control and trust

Data exists in vast quantities, but data is often not findable or usable. We aim to make data **FAIR** – Findable, Accessible, Interoperable, and Reusable – and improve the secondary use of existing data.

To fulfil our purpose and support the sharing and secondary use of data for public and private data partners we establish concrete data projects with our partners, using our co-developed service portfolio. We support our data partners in creating value from data, in the context of open innovation, data-driven policy making, through transparency and with the human in control.

Our values

In 2023, the team at LNDS defined its values through a series of workshops. Our values are the foundation for the way we work, both inside the organisation as with all stakeholders. Through actively involving the team through questionnaires and open workshops, we defined the values that truly reflect our daily work and set the base for our organisational culture.

Our values

Trustable

We care about your rights and honour our commitments. Security and reliability are at the core of all our processes.

Thriving

We listen, adapt, and support you to succeed. We foster collaboration and innovation for societal impact with our partners.

Transparent

We communicate truthfully and explain limits and constraints. We share our know-how for your benefit.

People & Culture

34
Employees
(including interns
but excluding externals)

23
Nationalities

36
Average age

23 ──┼── 63

Age range

38%
Women

62%
Men

Infographics Date 31.12.2023

Evolution of team growth

Month	Value
Jan23	9
Feb23	14
Mar 23	15
Apr23	18
May23	22
Jun23	25
Jul23	29
Aug23	29
Sep23	30
Oct23	30
Nov23	33
Dec23	34
Jan24	43
Feb24	44
Mar24	49
Apr24	56
May24	62

● Permanent contract   ● Fixed-term contract   ● Internship
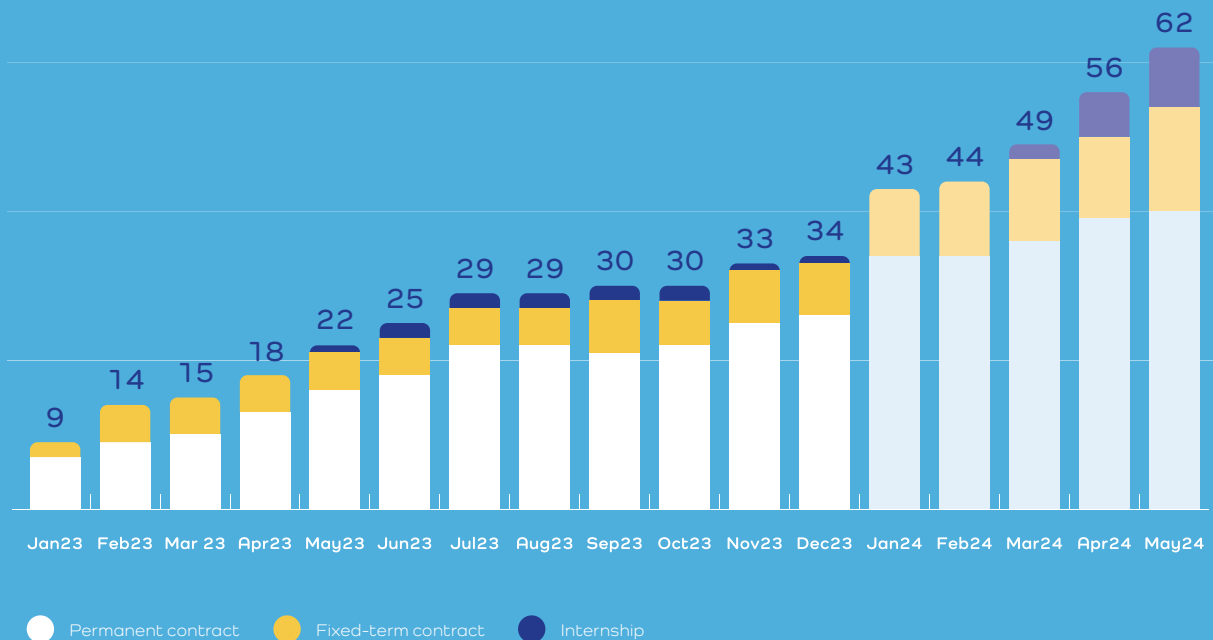
A Diverse and Growing Team

In 2023, our team expanded at a remarkable rate, growing from 7 employees in 2022 to 34 employees by 31 December 2023. This significant and rapid increase not only reflects our commitment to advancing data services in Luxembourg, but also showcases the dedication to fostering a diverse and inclusive workplace.

We are proud to represent a microcosm of Luxembourg's multicultural landscape. Our team boasts representation from 23 different nationalities, with women constituting 38% of the workforce, and an average age of 36 years old.

The diversity is a testament to our belief in the strength of varied perspectives and experiences, which is crucial for innovation and problem-solving in the new and dynamic field of data services. Each member brings a wealth of expertise and knowledge, contributing to the organisation's robust capabilities in managing data projects and creating societal impact through supporting value creation of data for our data partners.

We are committed to the Diversity Charter Lëtzebuerg (signed on 14 May 2024) further emphasising our role in promoting an inclusive work environment. Not only does it enhance our operational capabilities, but it also contributes positively to Luxembourg's diverse cultural landscape.

Trustable, thriving, transparent – a value-based culture

Our culture is a healthy mix of hard work, compliance, enjoyment, and collaboration. It is deeply rooted in our three core values: being Trustable, fostering a Thriving environment, and maintaining Transparency. These values guide our actions and decisions, ensuring that we remain a reliable, dynamic, and open organisation.

To streamline processes and enhance team dynamics we follow the Agile methodology, called the Scaled Agile Framework (SAFe). We empower our employees to take initiative, significantly reducing red tape and fostering a culture where bureaucracy does not stifle progress. Embracing this flat organisational structure, we create an environment where autonomy, creativity and ideas flourish. This approach enables flexibility and innovation, allowing our teams to navigate challenges with agility and inventiveness.

A Commitment to Social Impact

In our ongoing commitment to social responsibility, we are proud to introduce our Social Impact Days initiative. This program allows our employees to dedicate two paid workdays per year to engage in social work or community service of their choice.

A group of three employees spent their Social Impact Days assisting the team at the Fondation Follereau Luxembourg to clean and optimise their IT infrastructure, including Wi-Fi, conference room setup, cable management, and laptop cleaning.

One employee participated in a 'Train-the-Trainer' event organised by the German Ju-Jutsu Association, which hosts this international event annually. This event aimed to develop new trainers for the association.

These experiences have not only fostered a sense of community and social responsibility among our employees but have also made a tangible difference in our local communities. We look forward to seeing the continued positive impact of this initiative in the coming years.

ELSI by Design & Default

LNDS embraces ELSI

Who is ELSI you may wonder. But it is rather: what is ELSI? ELSI stands for Ethical, Legal and Social Implications. For an organisation like LNDS with secondary use of data in its mission, ethical, legal and social implications are key. We therefore embrace ELSI and take it to the heart of our operations. At LNDS, we do "ELSI by design and default", one step up from "data protection by design and default" as introduced in the General Data Protection Regulation (GDPR).

Why ELSI?

Ethical considerations have been made for a reason, not for luxury. If we want to use our citizen's data, we need their buy-in and their trust. If citizens start to withhold their data from primary applications, like healthcare or energy, because they are worried about secondary use, then everyone gets damaged. Only if we are in agreement on what could and should be achieved from the use of our data, if we offer enough privacy, we can really achieve our goals.

The legal framework for secondary use is getting more and more elaborate, also beyond the GDPR and the Open Data Directive. The European Union steps forward with the EU Data Governance Act, the EU Data Act, the European Health Data Space Regulation and many more laws are the building blocks of the regulatory framework around data use and reuse. LNDS wants to contribute to a responsible and compliant data sharing in Luxembourg.

The social implications of data reuse can be positive and negative. Through legal compliance and ethical data reuse, we want to foster the positive side: from decision-making in the healthcare system to better socio-economic policies, from information on the-fastest-path-to-the-closest-maternity to identifying weak spots in the broadband internet provision in Luxembourg. There are many ways how the society may benefit from data reuse.

ELSI in our tools and services

Where ELSI aspects are considered early on, from the design of a service and a product, it becomes more easy to balance privacy and functionality. All our services are pursued jointly with a member of our ELSI team. They help to plan our procedures and tools in a way that considers the rights and interests of all stakeholders.

ELSI in our projects

The ELSI team does not only accompany the internal developments, we also engage in European projects to work jointly on a better secondary use of personal data. LNDS led the ELSI work package in three projects funded by the European Union, from three different programmes and is engaged in several more. Overall, we participated on ELSI topics in six EU projects in the year 2023.

Participation in 6 projects
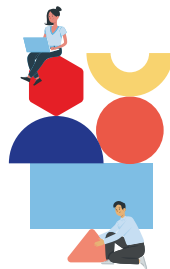
ELSI in legislation

It has been recognised that sharing of data for secondary use needs legal oversight to ensure it is done properly. The Data Governance Act (DGA) was developed to ensure that confidential data from the public sector is shared in a fair and secure way. Measures to safeguard people's privacy will become even more important when the European Health Data Space (EHDS) is created. LNDS supported the Luxembourgish government with advice on responsible and practical aspects of secondary use of personal data in the context of the national implementation of the DGA and the negotiations of the EHDS on the European level. The Health Data Access Body project got awarded with European funding to prepare for the implementation of EHDS.

ELSI for people

Compliance with ethical and legal requirements is not trivial. From awareness of ELSI aspects to the right interpretation of the legislation, LNDS wants to support also others in ELSI compliance. We therefore engage in training on data protection, "ELSI literacy", for people working with data for experts. And we have established a GDPR working group for DPOs from the research or research associated sectors.
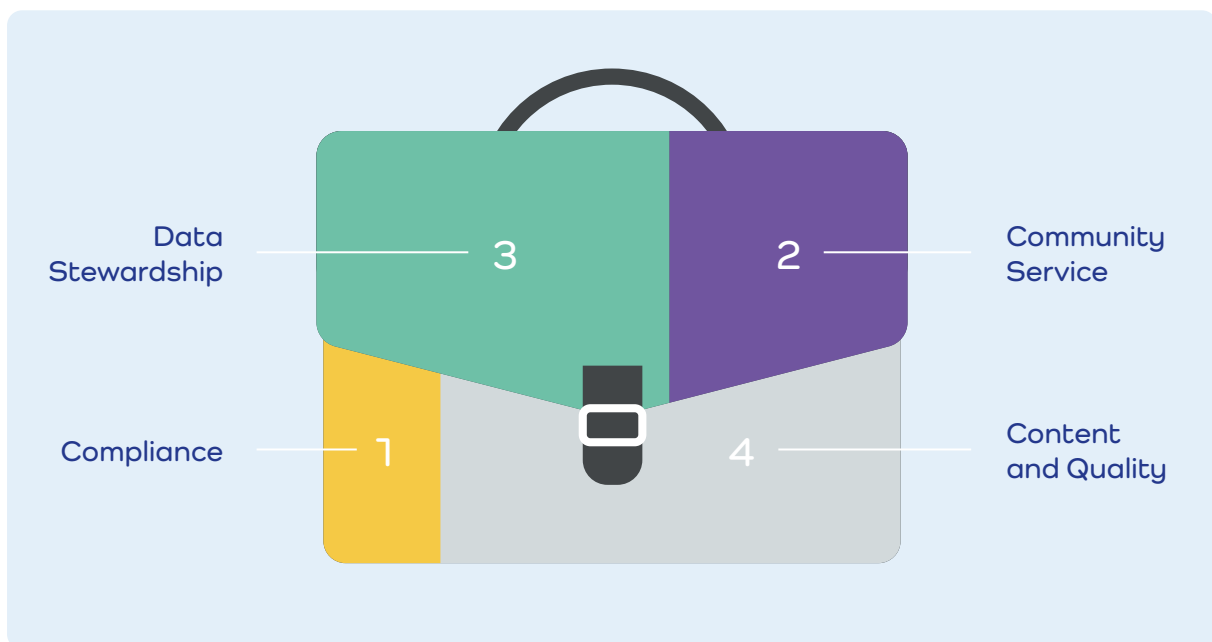
Service Portfolio
Services to Enable secondary use of data

As a customer-centric organisation, the services of LNDS focus on delivering value to our users via enabling the secondary use of data. These services are currently freely available to our users – our data partners – to support them in generating impact from the data.

Our service portfolio ranges from tools and infrastructure to data compliance, data stewardship, data content and quality, as well as community services. These services respond to the needs of our data partners along the entire data reuse lifecycle.

Data Stewardship **3**

Community Service **2**

Compliance **1**

Content and Quality **4**

Service portfolio

Co-created with our data partners via concrete data projects, in 2023 we released 10 services into production. In 2024, we continue to further develop the service portfolio, including maintenance, development and new releases.
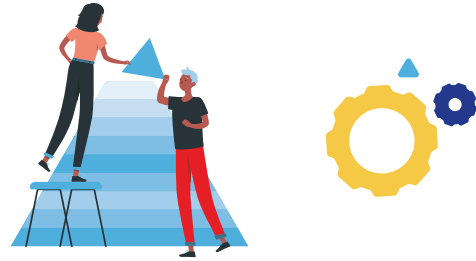
● Data Stewardship   ● Content and Quality   ● Compliance   ● Community Service

Data Project Consulting and Onboarding

Our Data Project Consulting and Onboarding service, is the first step to get started with a data project. It is an exercise of two-way communication, with two main objectives: to understand your project scope, goals and anticipated impact, and agree on how LNDS can help the project to succeed.

Data Access Request and Review

Access request procedures can be challenging for all parties involved. Our Data Access Request and Review Service streamlines access request procedures end-to-end. We optimise data use proposals, provide a defined request and review process and provision secure data access.

Data Management and Stewardship Support

Our Data Management and Stewardship Support service assists organisations in Luxembourg in building data management and stewardship capacity. Organisations can benefit from customised solutions throughout the entire data lifecycle.

Data Cataloguing

Recording structured, standardised information for all of an organisation's data assets saves time, energy and money in the long run. LNDS Data Cataloguing helps organisations identify what information they should record and how.

Data Extraction, Enrichment and Merging

Most data analysis projects require combining data from multiple sources. Our Data Extraction, Enrichment and Merging service supports the secure provision and mapping of data from multiple providers.

Data Quality and Curation

Our Data Quality and Curation services can help organisations improve the quality of their data by retroactively transforming existing datasets as well as streamlining primary data collection processes.

Synthetic Data Factory

The Synthetic Data Factory service helps our data partners to build up a synthetic dataset based on statistical information and the underlying relationships between the features of interest.

ELSI and Data Governance Consulting

The ELSI and Data Governance Consulting service is designed to support our governmental partners in their efforts to develop legislation governing secondary use of public data.

Data Management National Community of Practice

The Data Management National Community of Practice service facilitates knowledge exchange and coordination among Luxembourg's data management professionals.

GDPR Working Group

GDPR Working Group is a service providing an exchange platform for data protection officers and other staff engaged in activities related to data protection in public sector or research.

Tooling & Infrastructure

Technology strategy - Setup and scale up

At the heart of our mission, our technology strategy is designed to enhance operational efficiency and empower users through state-of-the-art tooling and secure IT infrastructures. This two-fold approach focuses on developing solid internal tools to streamline our daily activities and on deploying external facing tooling that enable our users to consume our services efficiently. This year, we also embarked on the continuous improvement path of reaching information security management and privacy information management certifications in the forms of ISO 27001 and ISO 27701.

Keeping up with growth

We scaled up our internal tooling to support our fast growth from 7 to 34 employees by the end of the year. To sustain such growth, we balance our tools landscape between Software-as-a-Service (SaaS) and internally hosted platforms. Using SaaS solutions made it possible to seamlessly enhance our tooling capabilities and to adapt to constant change.

We are building external tooling to meet our data partner expectations and to support our service teams in delivering value. In addition to supporting national data projects and the development of our services, our tooling also effectively contributes to our various subsidy EU projects which each have their own reporting, functional and technical requirements and expectations. As drivers of change, our tooling landscape will keep evolving to meet the needs of our team, our data partners and other collaborations.

Serving a changing ecosystem

We started by building a national data catalogue for restricted data based on the latest EU-endorsed standard DCAT-AP 3.0 (Data Catalogue Vocabulary). In addition, we released a knowledge sharing platform that will gradually guide our users on how to use our tooling ecosystem. This initial set will be complemented over the coming years with a data access request system, secure processing environments, a comprehensive service desk and an identity and access management platform. These building blocks will serve our current data projects and will also be adapted to meet the requirements of the upcoming legislation such as the Data Governance Act and the European Health Data Space regulation. We are leveraging feedback and knowledge from our partners, and through our EU project collaborations to develop and keep our tooling up to date and interoperable with the European ecosystem.

For all our tooling, internal or external, we are applying data protection and security principles in line with GDPR and our certification journey.

Securing from the inside out

We are integrating security practices into all layers of our technology stacks, from choosing local trusted cloud providers to setting up secure software and data engineering principles and DevSecOps. We are solving this challenge in a fast changing environment by implementing reusable building blocks that are both serving current needs and are future proof. We choose these blocks accordingly as a mix of open source and commercial providers by focusing on interoperability, portability and standards.

Established frameworks are helping us to structure and formalise our compliance strategy. This year laid the ground work for the ISO 27001 and ISO 27701 certifications to create a secure foundation for secure and trusted user interactions, both for our staff but also for our data partners.

Paving the way for data spaces and data ecosystems

Regulations such as the upcoming European Health Data Space, the Data Governance Act and the Data Act are rapidly creating regulatory frameworks to allow access to and exchange of data across the European Member States. In addition, there is a drive from the industry to exchange data for innovation via initiatives such as the International Data Space Association and Gaia-X and from the academic sector via the European Open Science Cloud. At LNDS, we are laying the foundations to contribute to these initiatives and will integrate emerging technologies and standards in our tooling and service offering. These capacities need to be enhanced by exploring new fields such as secure federated data analysis, heterogenous secure processing environments, to streamline operations and build reliable tools for the future.

Collaborating for value creation

We can only achieve continuous development and improvement by exchanging feedback and collaborating. If you are interested to contribute to the design of these technologies or are curious how the upcoming technological trends might shape the future of data spaces, data ecosystems and secondary use of data across borders, reach out to us and we will tackle these challenges together.

Data Summit Luxembourg

Monday 4 December 2023 marked a historical moment for us - namely the inaugural Launch Event of LNDS and the first edition of the Data Summit Luxembourg. In the presence of around 300 guests, in the Plenary Hall of the European Convention Center Luxembourg (ECCL), LNDS was inaugurated through an official ribbon cutting ceremony by the Minister for Research and Higher Education and Minister for Digitalisation, Madame Stéphanie Obertin.
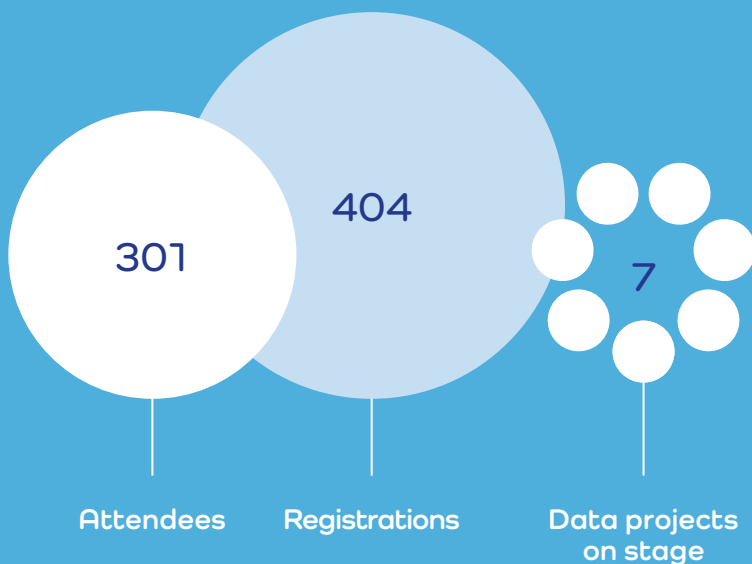
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Launches:

- Open for service
- Website launch
- Contribution to open data
- First release of the Luxembourg National Data Catalogue
- Open for Data Project Submissions
- Synthetic Data Factory - open for contributions in Gitlab

301

Attendees

404

Registrations

7

Data projects on stage

Declaring readiness to serve

The Launch Event focused on an overview of our **Services**, mission, and purpose to serve National and European level interests, led by the LNDS Leadership team, as well as by Romain Martin, Chairman of the LNDS Board of Directors. On stage, our dynamic team showed insights to the work of our first operational year, resulting in the launch of:

➜ The LNDS **website**

➜ LNDS presence on the open data platform **data.public.lu**, with first datasets from the Synthetic Data Factory as well as our KPIs.

➜ A first release of the **Luxembourg National Data Catalogue**– a national metadata catalogue to discover public sector data in Luxembourg.

➜ The opening of the **Synthetic Data Factory development repository** - a collaborative project to provide synthetic datasets based on available national public data, including statistical distributions for people, companies, streets, infrastructure, and so forth.

➜ Readiness to receive submissions for data projects and the related **onboarding service**

Through the various stands in the Foyer of the conference center, visitors could discuss first-hand with LNDS staff to learn more about us and our services, while networking accompanied by delicious food. Thanks to the collaboration with Luxembourg Institute of Science and Technology (LIST), there was a possibility to explore a visualisation of the Synthetic Data Factory.

"The launch of the Luxembourg National Data Service is not simply a technological event, but a declaration of commitment to a future where data is a driver of shared prosperity and where we are committed to prove that the value of data can be unleashed without compromising on concerns for data privacy and security.

By joining forces, encouraging innovation and protecting the rights of our citizens, we can create an even stronger, smarter and more resilient Luxembourg."

— Minister for Research and Higher Education and Minister for Digitalisation, Stéphanie Obertin

Presenting Data Projects for Impact

The event was by far not only about LNDS. The first edition of our annual signature event - the Data Summit Luxembourg - brought to light initial impact of data projects. Seven data partners, presented collaborative data projects and results of the work, at various stages of implementation. Data partners included MyConnectivity, the Luxembourg Environment Agency, Observatoire National de la Santé, C2DH, Luxinnovation, Ministry of Research and Higher Education and Luxembourg Institute of Socio-Economic Research.

Connecting national and European level interests

To showcase LNDS' participation on European Level, Saila Rinne from the DG CONNECT of the European Commission shared knowledge about EU digital health and data initiatives. In addition, we concluded the event with an interesting roundtable discussion around Data spaces in Europe and their relevance for Luxembourg, including Ulrich Ahle, CEO of the Gaia-X, and Federico Milani, Deputy Head of the Data Policy and Innovation Unit at DG-CONNECT.

We thank all our partners, guests, and staff for making the first LNDS event a reality!

"This year's Data Summit Luxembourg is the first of many. We aim to evolve it into an annual, signature event for local and international participants, to become the ultimate learning event for data sharing and analysis."

— CEO of LNDS, Bert Verdonck

Future outlook

The next edition of the Data Summit Luxembourg will be held on 11 December 2024, focusing on **Innovation throughout the Data Journey**. This second edition also opens its doors to external organisations to sponsor or exhibit at the Data Summit Luxembourg. We welcome both national and international participants to join us for this impactful event focused on public sector data.

datasummit.lu

Innovation throughout the Data Journey
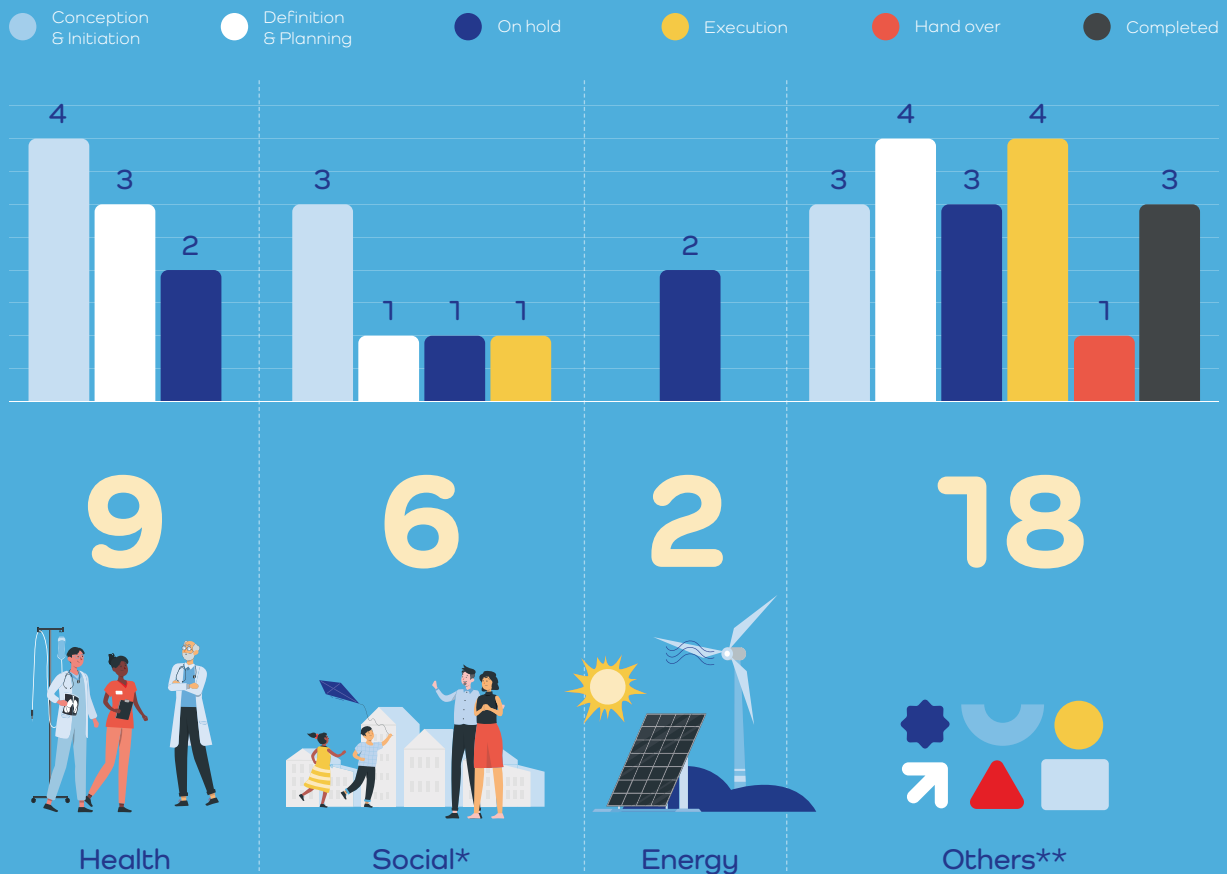11 December 2024

European Convention Center Luxembourg

Data Projects

We deliver our services to the users
via concrete Data Projects.

A data project is a defined project between LNDS
and a partner organisation, who has a need to use
Luxembourgish public sector data to solve a societal
problem or gap. We call the partner organisations our
data partners. A data partner can be a data user,
a data provider, or both. In 2023 the focus of
our data projects was in the domain of health,
social and energy.

Conception & Initiation · Definition & Planning · On hold · Execution · Hand over · Completed

Health: 4, 3, 2
Social*: 3, 1, 1, 1
Energy: 2
Others**: 3, 4, 3, 4, 1, 3

9 Health
6 Social*
2 Energy
18 Others**

*Population & Society; **Environnement, Education, Science & Technology, Research, Economy & Finance, Training

How we deliver our services

DATA PROVIDERS, MAKE PUBLIC SOURCE DATA AVAILABLE FOR RE-USE UNDER MANAGED CONDITIONS

DATA CONSUMERS, ACCESS DATA SELECTIVELY FOR RESEARCH, INNOVATION AND POLICY MAKING

DATA SERVICES, ENABLING TRUSTABLE DATA SHARING

Examples of Data Projects with our Data Partners

Administration de l'Environnement (AEV) - Data Cataloguing Pilot Project

The LNDS - AEV Data Cataloguing pilot, the first project using the LNDS Data Cataloguing service, ran from July to November 2023. The project consisted of a series of workshops to elaborate a metadata model suitable for capturing the specific needs of the diverse datasets held by the Administration de l'Environnement (AEV). The model was then implemented in a proof-of-concept metadata capture system, developed by LNDS as part of the project and deployed inside AEV's IT infrastructure for their internal use. Finally, AEV domain experts were introduced to the general concepts of data cataloguing and their application within the administration through the new system in two interactive training workshops. Two follow-on projects building on the lessons and success of the pilot are currently underway.

OBSANTÉ - Capturing Data Transformation Metadata

The Observatoire National de la Santé (OBSANTÉ) receives data from a number of external sources and then processes this data to generate the health and healthcare system indicators that contribute to their health monitoring mission. Data are usually accompanied by unstructured free-text, sometimes ambiguous, descriptions of any processing steps performed to generate the data, any inclusion or exclusion criteria to data selection, or any other relevant annotations.

In this project, we are exploring possible standards for capturing data transformation metadata in a machine-readable format, both for transformations before the data reaches OBSANTÉ and for any subsequent processing on their part. The aim is to provide a platform-agnostic audit trail of all data processing steps that contributed to the final figures and results published in reports and that can be published alongside reports to maximise transparency and reproducibility.

DLH - Data stewardship capacity building with our very first training on the Digital Learning Hub

LNDS embarked on a collaborative effort to enhance DLH's (Digital Learning Hub) training offerings in data literacy. Our inaugural course, Data Stewardship Fundamentals, covers the essential aspects of effective data management and stewardship. Starting from foundational data definitions and challenges, it delves into the key skills for successful data stewards. Participants will gain insights into their roles, obligations, and the essential principles and practices of data stewardship. Moreover, the course emphasizes the importance of data governance frameworks, policies, and procedures within any organisation.

LIST - Supporting research organizations in Data Management Planning

In line with good scientific practice and funder requirements, data management planning has become a crucial first step for all research projects. The Luxembourg Institute of Science and Technology (LIST) supported its researchers in this process with document-based institutional guidelines. Implementing guidelines can be time-consuming; however, proper tooling will reduce the effort and promote adoption.

LNDS supported LIST in implementing their guidelines in a state-of-the-art software tool called the Data Stewardship Wizard. This tool guides researchers in making decisions regarding their project's data management. We added the ability to export these decisions into a plan as required by funders, starting with the Luxembourg National Research Fund template. The LIST has rolled out the tool in production, and several consortia projects are already using it to develop their data management plans.

Fostering knowledge exchange and collaboration with Data Management National Community of Practice

As part of our mission to support national actors in data driven research and innovation, at LNDS we set out to establish a community for data management professionals in Luxembourg. With this community, we aim to facilitate networking and the exchange of data management and stewardship knowledge and best practices among professionals and their organisations. In addition, through community focus groups, we aim to provide a breeding ground for joint work on shared interests, such as national data management guidelines, data stewardship job profiles and the documentation of tacit best practices.

We organised two kick-off workshops in Belval in the summer of 2023 to get off to a good start. These events brought together, for the first time, researchers and data management practitioners from academia and various public administrations. Our community has quickly grown to include more than 100 members with regular and well-attended knowledge exchange calls and thematic workshops.

Data Project MyConnectivity: The last 5%: A data analysis and clustering approach to identify and quantify areas missing ultra-high-speed connection points in Luxembourg

MyConnectivity is a Joint Economic Interest Group (G.I.E) with the core mission to enhance the availability and utilisation of high-speed connectivity throughout the Grand Duchy of Luxembourg. MyConnectivity faced the challenge of limited data exchange between operators and no access to the necessary datasets from the operators. LNDS and MyConnectivity joined forces to co-develop a **detector to spot areas missing ultra-high-speed connection points** based on the data from the Institut Luxembourgeois de Régulation (ILR). The data project addresses these areas - namely the 5% gap of areas lacking ultra-high-speed broadband connectivity, illustrated with the red polygons on the map. The project leveraged LNDS' tools and data services, including Data Extraction, Enrichment and Merging, Secure Processing Environment, and the Data Analysis and Visualisation Support service, as well as advice on ELSI subjects, in order to detect and describe the areas with the aim to enable improved connectivity in Luxembourg.

Connecting the last

5%

of buildings in Luxembourg
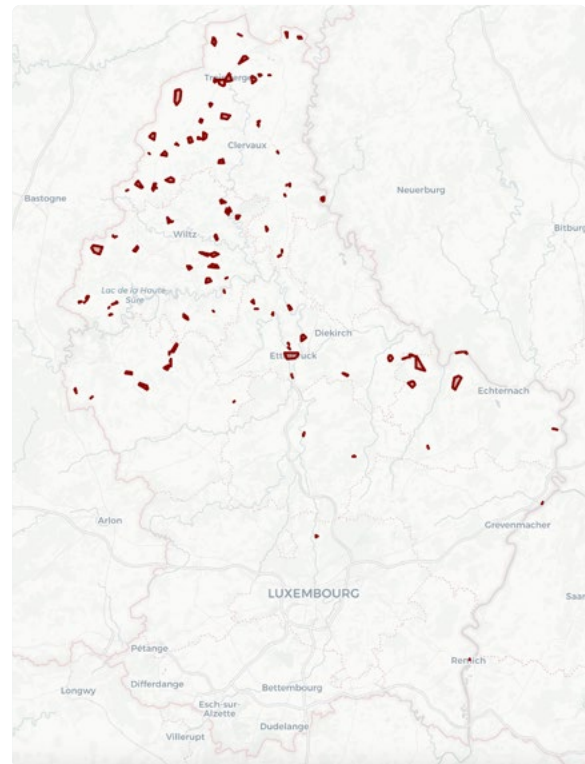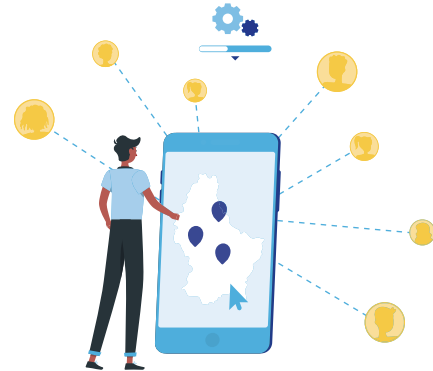
Visualisation of missing ultra-high-speed connection points in Luxembourg using an interactive map visualisation. Locations and regions without ultra-high-speed internet are depicted in red.

European Level Involvement

Active involvement also outside of the borders of Luxembourg is important. LNDS is involved in various subsidy projects and other international collaborations in order to foster knowledge sharing and interoperability.

In-Kind
€1.44M
(38.6%)

Subsidy
Contribution
€2.30M
(61.4%)

7

5

3

Number of grants
LNDS is involved
in 2023

Number of grant
proposals submitted
in 2023

Number of new
grants awarded
in 2023

Subsidy projects

LNDS participates in European projects to develop new services and to achieve interoperability, making use of the international, state-of-the-art developments.

LNDS contributes actively to the development of data spaces, standards, and best practices at the European level. We have been leading and contributing to strategic projects such as the European Genomics Data Infrastructure, the European Health Data Space Pilot and Health Data Access Body.

Overview of projects and subsidy level

We have already managed to bring in 7 projects and over 2 million euro of funding for Luxembourg (by 2023). However, it is not the number and money that counts the most, but being a key participant on the European Union level for designing the data spaces for the future.

Number of Collaboration Partners per Country

<5   5-10   10-15   ≥15
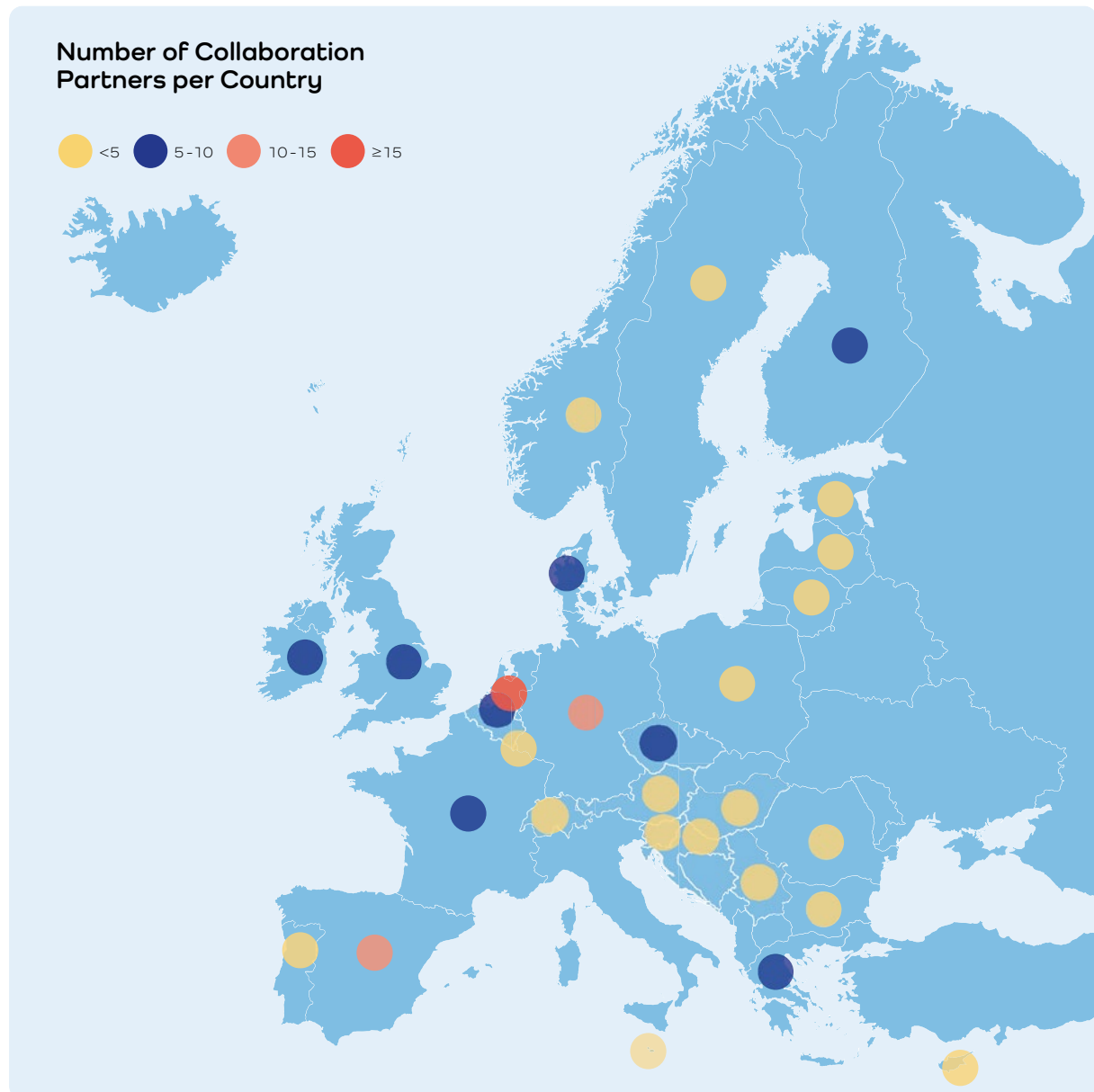
Project summaries

B1MG

The Beyond 1 Million Genomes (B1MG) project is helping to create a network of genetic and clinical data across Europe. The project provides coordination and support to the 1+ Million Genomes Initiative (1+MG). LNDS is leading the Ethical, Legal and Social Issues (ELSI) work package aiming to establish a legal, ethical and socially acceptable framework for secure sharing of genomics data across Europe.

GDI

The Genomic Data Infrastructure (GDI) is a cross-border collaboration with 54 partners from 20 countries, involving human genomic and related phenotypic and clinical data in order to support improved clinical diagnostics, treatments and predictive medicine for European citizens. In brief, the project targets better public health measures to benefit citizens, healthcare systems and the economy. LNDS is leading the work packages in charge of data governance and long-term sustainability, as well as European level operations. LNDS is also leading the deployment of the functions of a national node as one of the vanguard nodes in the GDI network.

Can.HEAL

By building synergies between public health and genomics across EU, the Can.HEAL project presents a new approach of tackling the challenges which cancer poses to patients, their relatives, and the population at large. LNDS is leading the work package focusing on developing legal, ethical and trust frameworks for clinical and public health cancer genomics.

EHDS2-pilot

This project builds a pilot version of the European Health Data Space (EHDS) infrastructure for the secondary use of health data, "HealthData@EU", which will serve research, innovation, policy making and regulatory purposes. LNDS is contributing to tasks related to regulatory and legal compliance.

EPND

The European Platform for Neurodegenerative Diseases (EPND) aims to revolutionise scientific breakthroughs in the effort to diagnose, treat, and prevent neurodegenerative diseases. The multidisciplinary consortium connects public and private leaders across Europe to combine technology, security, and governance for real, collective progress on neurodegenerative diseases. LNDS is leading the work related to legal and ethical aspects.

HealthyCloud

HealthyCloud is a research and innovation project aiming to create an effective, secure and sustainable computational system for exchanging health-related data across Europe. LNDS is co-leading the work package related to ELSI aspects of cross-border health data access for cloud analysis.

HEALTHYCLOUD
Health Research & Innovation Cloud

HANCESTRO

HANCESTRO is an ontology development project funded by the Chan Zuckerberg Initiative (CZI) as part of their Cell Science programme. The project aims to expand the scope of the Human Ancestry Ontology (HANCESTRO) to improve precision in reporting genetic ancestry and self-reported ethnicity in scientific datasets, especially for previously under-represented populations.

International collaborations

ELIXIR

ELIXIR is a European life sciences infrastructure, bringing together scientists from 23 countries and over 250 research institutes. As an intergovernmental organisation, ELIXIR brings together life science resources, including databases, software tools, training materials, cloud storage and supercomputers, across Europe. The goal of ELIXIR is to coordinate these resources so that they form a single infrastructure, to make it easier for scientists to find and share data, exchange expertise, and agree on best practices. Via collaboration with the Luxembourg Centre for Systems Biomedicine of the University Luxembourg, LNDS is a member of the ELIXIR Luxembourg Node and serves in the ELIXIR board of directors.

elixir **LUXEMBOURG**

GAIA-X

Gaia-X is an initiative that develops a digital governance framework based on European values. Its goal is to create a federated, secure data infrastructure that can be applied to existing cloud and edge technology stacks. By emphasising transparency, controllability, portability, and interoperability across data and services, Gaia-X aims to foster an economy of data in various domains, spanning both private and public sectors. LNDS is an active member of Gaia-X and is part of the Gaia-X Board of Directors.

DSSC

The Data Spaces Support Center (DSSC) is an initiative focused on accelerating the creation of European sovereign data spaces. These data spaces aim to enhance data availability while upholding EU values. By fostering collaboration and ensuring secure data sharing, the DSSC contributes to a more interconnected and data-driven European landscape. The CEO of LNDS is an invited expert to the DSSC project, to provide advice and to contribute to the deliverables of this project.
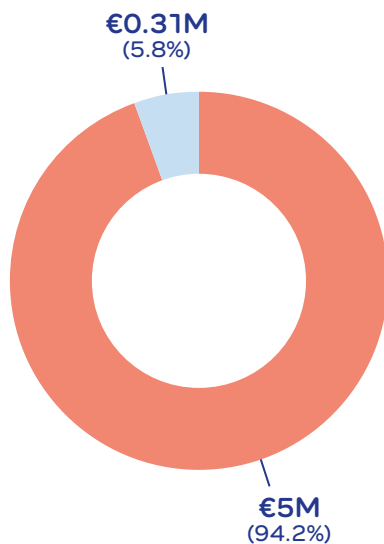
DATA SPACES SUPPORT CENTRE

gaia-x

Financial Report

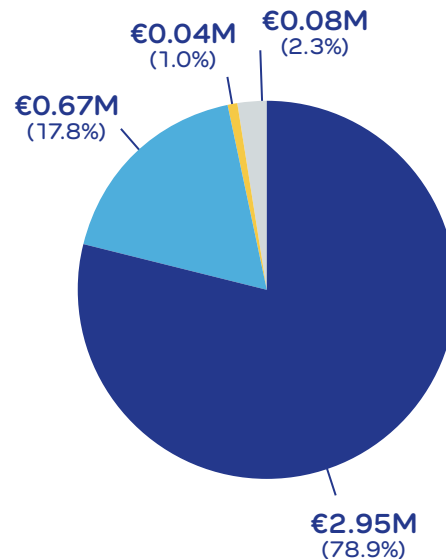The financial results after audit and approval by the Board and the General Assembly are summarised on these pages.

Sources of funding

€0.31M
(5.8%)

€5M
(94.2%)

● Government   ● Other

Cost categories

€0.04M
(1.0%)

€0.08M
(2.3%)

€0.67M
(17.8%)

€2.95M
(78.9%)

● Personnel costs   ● Consumables and external expenses

● Tech/IT expenses   ● Other expense

Balance sheet (in euros)

ASSETS	2023	2022
Subscribed capital unpaid	750.00	8,500.00
Formation expenses	872.53	1,121.82
Fixed assets	285,637.86	28,004.08
Current assets	9,442,626.47	5,878,271.47
Prepayments and accrued income	46,805.68	6,483.95
Balance sheet total (Assets)	**9,776,692.54**	**5,922,381.32**

CAPITAL, RESERVES AND LIABILITIES	2023	2022
Capital and reserves	7,491,719.20	5,880,234.60
Provisions	242,738.01	3,000.00
Creditors	478,016.10	39,146.72
Deferred income	1,564,219.23	–
Balance sheet total (Capital, Reserves and Liabilities)	**9,776,692.54**	**5,922,381.32**

Profit and loss account (in euros)

	2023	2022
Net turnover	20,900.28	–
Other operating income	5,329,146.17	6,000,492.80
Other interest receivable and similar income	2,915.42	–
Total incoming	**5,352,961.87**	**6,000,492.80**
Raw materials and consumables and other external expenses	-667,187.90	-12,848.61
Staff costs		
a) Wages and salaries	-2,663,684.99	-98,444.99
b) Social security costs	-289,624.62	-12,236.44
Value adjustments	-84,934.41	-2,223.16
Other operating expenses	-35,980.94	-3,000.00
Interest payable and similar charges	-64.41	-5.00
Total Outgoing	**-3,741,477.27**	**-128,758.2**
Profit for the financial year	**1,611,484.60**	**5,871,734.60**

Future Outlook

Save the date
11 December 2024,
Data Summit Luxembourg

Subscribe to
monthly **newsletter**

At the time of publication, we are halfway 2024 already. Time flies! Our organisation continues its rapid expansion, as we reach 62 people (including 8 interns). We have signed the Luxembourg Diversity Charter, as we are committed to continue to foster our very diverse employee base (currently 27 nationalities).*

This accelerated speed starts to show in the number of data projects that are identified, active or finalised. We are on a track to have more than 30 data projects in implementation stage or completed by the year end. Ten of the most impactful projects will be on show at the next Data Summit Luxembourg, on 11 December. We also secured funding from three new European projects in the health domain, while we are contending for several more projects, now also in the energy and mobility domains.
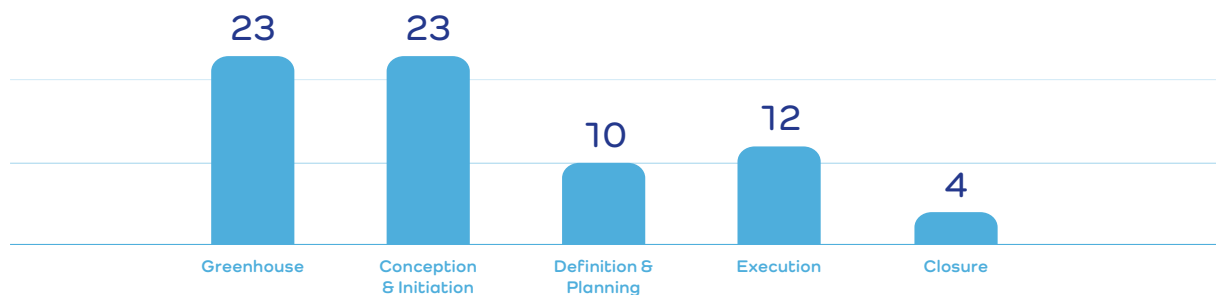
The service and tooling portfolio continues to expand, with an ambitious roadmap, extending the existing feature sets as well as introducing brand new tools and services. By the next Data Summit, we target to demonstrate a full end-to-end data workflow, from data search, to access requests, secure processing, pseudonymisation, over analysis and visualisation, and up to archiving.

We continue to contribute to the regulatory implementation plans for the Data Governance Act and the European Health Data Space in Luxembourg, while keeping good connections with similar implementations in other Member States.

We have submitted a new convention for the 2024-2025 period, to ensure our governmental funding in line with the earlier multi-year budget. And we started the preparation of our longer term strategic plans, for the 2026-2029 period.

In order to make these long-term plans concrete, we started brainstorming on a number of breakthrough or "moonshot" initiatives: data driven innovations with a big, positive societal impact. These initiatives will need national as well as international partners, to drive and innovate collectively. We might expose some of these moonshot ideas at the next Data Summit. **So stay posted!**

72 Projects

Greenhouse	Conception & Initiation	Definition & Planning	Execution	Closure
23	23	10	12	4

*data on this page refer to numbers at end of May 2024

Enabling value creation from secondary use of data

LNDS
LUXEMBOURG NATIONAL DATA SERVICE

The Luxembourg National Data Service is a brand of PNED G.I.E., an economic interest group established by the Luxembourg government and public institutes.

LNDS

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