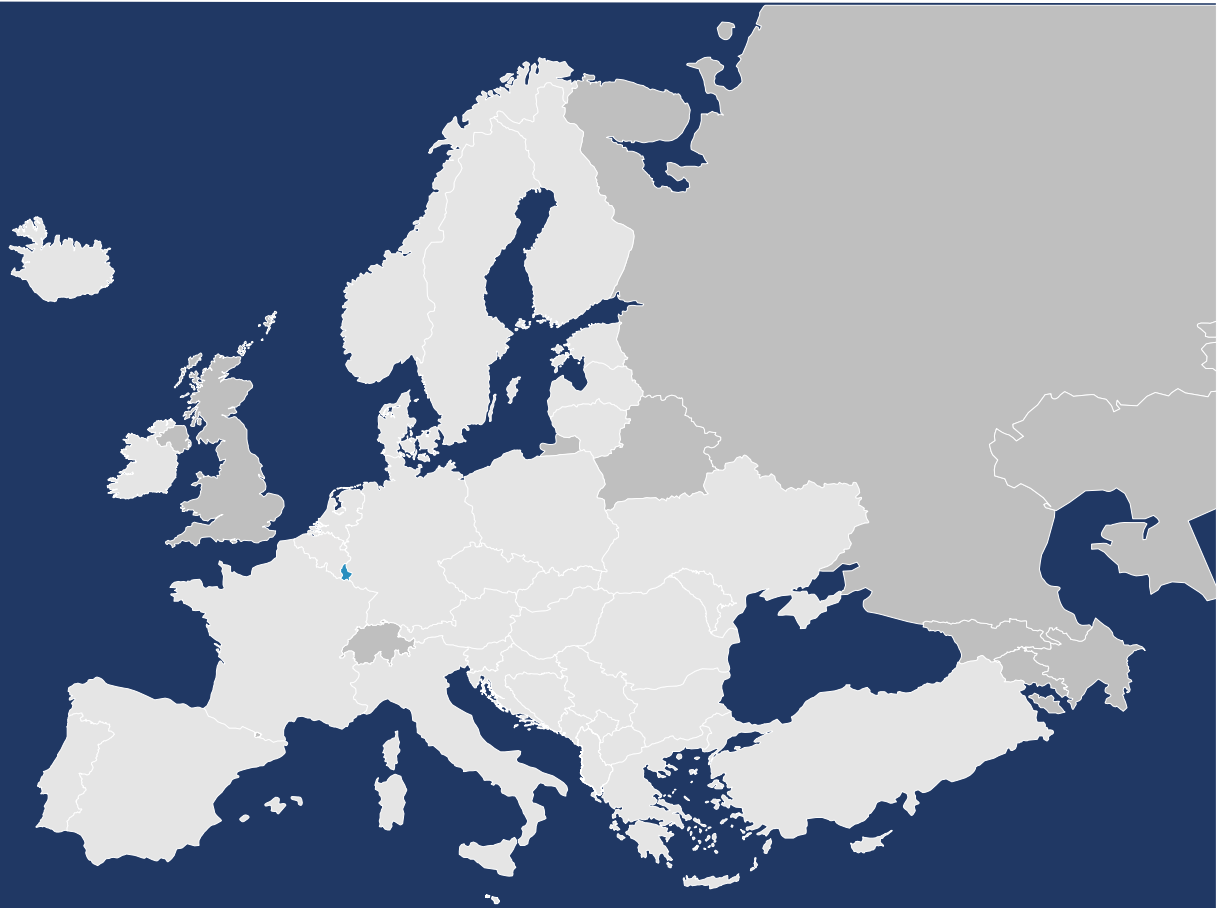


# LUXEMBOURG

## 2024 Digital Public Administration Factsheet

Supporting document






Main developments in digital  
public administrations and  
interoperability

JULY 2024

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Icons Glossary		
<i>Political Communication</i>	<i>Legislation</i>	<i>Infrastructure</i>
		

## 2030 DIGITAL DECADE

The **Digital Decade policy programme 2030** sets out digital ambitions for the next decade in the form of clear, concrete targets. The main goals can be summarised in 4 points:

- 1) a digitally skilled population and highly skilled digital professionals;
- 2) secure and sustainable digital infrastructures;
- 3) digital transformation of businesses;
- 4) digitalisation of public services.

### Skills

20 million employed **ICT specialists**, more graduates + gender balance  
80% of adults can **use tech** for everyday tasks

### Government

**Key Public Services** - 100% online  
Everyone can **access health records online**  
Everyone can use **eID**



### Infrastructure

**Gigabit connectivity** for everyone, **high-speed mobile coverage** (at least 5G) everywhere  
EU produces 20% of world's **semiconductors**  
10 000 **cloud edge nodes** = fast data access  
EU **quantum computing** by 2025

### Business

75% of companies using **Cloud, AI or Big Data**  
Double the number of **unicorn startups**  
90% of **SMEs taking up tech**

The production of the **Digital Public Administration factsheets and their supportive documents** support the objectives and targets of the Digital Decade programme. By referencing national initiatives on the digital transformation of public administrations and public services, as well as interoperability, they complement existing data and indicators included in the Digital Decade reports and related resources. They also highlight and promote key initiatives put in place or planned by EU countries to reach the Digital Decade's targets.



# 1. Interoperability State-of-Play

In 2017, the European Commission published the **European Interoperability Framework (EIF)** to give specific guidance on how to set up interoperable digital public services through a set of 47 recommendations divided in three pillars. The EIF Monitoring Mechanism (MM) was built on these pillars to evaluate the level of implementation of the framework within the Member States. The mechanism is based on a set of 91 Key Performance Indicators (KPIs) clustered within the three scoreboards (Principles, Layers, Conceptual model and Cross-border interoperability), outlined below.

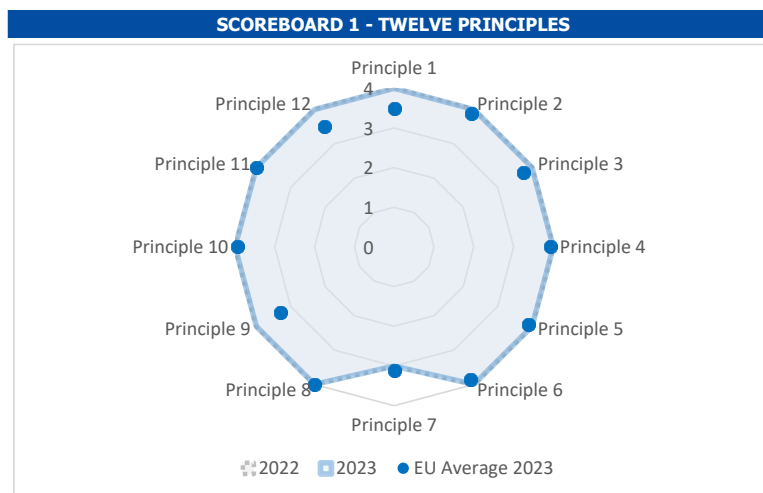
Starting from the 2022 edition, an additional scoreboard, Scoreboard 4, focusing on cross-border interoperability, has been incorporated. This scoreboard assesses the adherence to 35 Recommendations outlined in the EIF framework. Specifically, it encompasses Interoperability Principles 2, and 4 through 11 from Scoreboard 1, all recommendations pertaining to Interoperability Layers from Scoreboard 2, as well as Conceptual Model recommendations 36 to 43 and 46 to 47 from Scoreboard 3.

Scoreboard 1 Interoperability Principles		Scoreboard 2 Interoperability Layers		Scoreboard 3 Conceptual Model	
	Recommendation(s) n°		Recommendation(s) n°		Recommendation(s) n°
Principle 1 - Subsidiarity and Proportionality	1	Interoperability Governance	20-24	Conceptual Model	34-35
Principle 2 - Openness	2-4	Integrated Public Service Governance	25-26	Internal information sources and services	36
Principle 3 - Transparency	5	Legal Interoperability	27	Basic Registries	37-40
Principle 4 - Reusability	6-7	Organisational Interoperability	28-29	Open Data	41-43
Principle 5 - Technological neutrality and data portability	8-9	Semantic Interoperability	30-32	Catalogues	44
Principle 6 - User-centricity	10-13	Technical Interoperability	33	External information sources and services	45
Principle 7 - Inclusion and accessibility	14			Security and Privacy	46-47
Principle 8 - Security and privacy	15				
Principle 9 - Multilingualism	16				
Principle 10 - Administrative simplification	17				
Principle 11 - Preservation of information	18				
Principle 12 - Assessment of Effectiveness and Efficiency	19				

Scoreboard 4 Cross-border Interoperability

Source: European Interoperability Framework Monitoring Mechanism 2023

Each scoreboard breaks down the results into thematic areas (i.e. principles). The thematic areas are evaluated on a scale from one to four, where one means a lower level of implementation and four means a higher level of implementation. The graphs below show the result of the EIF MM data collection exercise for Luxembourg in 2023, comparing it with the EU average as well as the performance of the country in 2022.

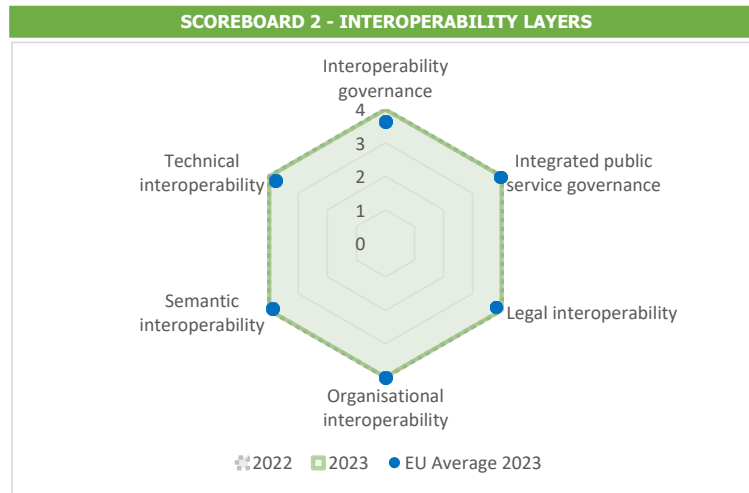


Source: European Interoperability Framework Monitoring Mechanism 2023

The results of Luxembourg related to Scoreboard 1 show an overall very good implementation of the twelve Principles. Luxembourg has a higher performance in the implementation of Principle 1 (Subsidiarity and Proportionality) and Principle 9 (Multilingualism) in comparison with the EU average as well as Principle 12 (Assessment of Effectiveness and Efficiency). The areas of improvement of Luxembourg regarding Scoreboard 1 are located in Principle 7 (Inclusion and

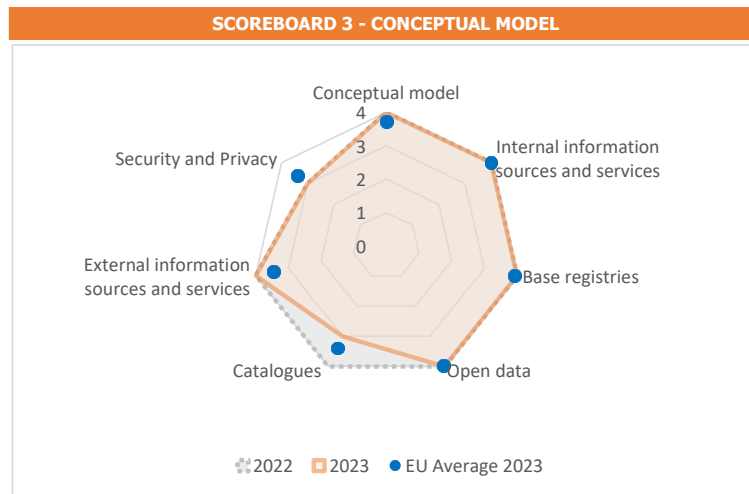


Accessibility). In particular, to focus on ensuring that all European public services are accessible to all citizens, including persons with disabilities, the elderly and other disadvantaged groups (Recommendation 14), would allow the country to reach a maximum score of 4 in Principle 7.



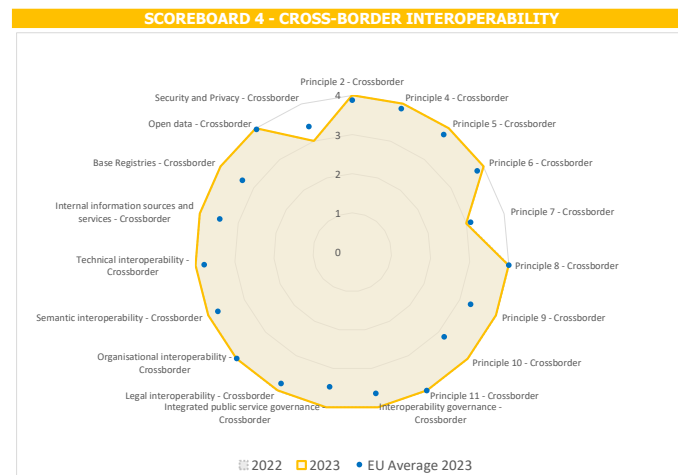
Source: European Interoperability Framework Monitoring Mechanism 2023

The scores of Luxembourg for the implementation of interoperability layers assessed for Scoreboard 2 highlight an overall very good performance. Luxembourg obtains maximum scores of 4 for all interoperability layers. However, the performance could be further improved, and more particularly, by focusing on the implementation of a CAMSS or similar assessment method for standard and specification at national level (Recommendation 22 – KPI 43). Overall, the high scores of Luxembourg demonstrate a strong implementation of a large majority of the recommendations related to the interoperability layers.



Source: European Interoperability Framework Monitoring Mechanism 2023

Luxembourg’s results on Scoreboard 3 on the Conceptual Model show a good performance in the implementation of corresponding recommendations as it meets the EU average for almost all of them. A potential area of improvement could be related to Security and Privacy, by focusing on the use of trust services in alignment with the Regulation on eID and Trust Services as mechanisms that ensure secure and protected data exchange in public services (Recommendation 47). Furthermore, the introduction of catalogues of public services, public data and interoperability solutions and the use of common models to describe them (Recommendation 44) could enable Luxembourg to achieve a better score on Catalogues.



Source: European Interoperability Framework Monitoring Mechanism 2023

The results of Luxembourg concerning Cross-border Interoperability in Scoreboard 4 show a very good performance of the country in several indicators. In addition, Luxembourg's results are, for most elements, above the EU average. However, Luxembourg has still margin for improvement regarding Principle 7 and Security and Privacy. For instance, efforts could focus on ensuring that all European public services are accessible to all citizens, including persons with disabilities, the elderly and other disadvantaged groups (Recommendation 14) and on the use of trust services according to the Regulation on eID and Trust Services as mechanisms that ensure secure and protected data exchange in public services (Recommendation 47).

Additional information on Luxembourg's results on the EIF Monitoring Mechanism is available online through [interactive dashboards](#).

#### Curious about the state-of-play on digital public administrations in this country?

Please find here some relevant indicators and resources on this topic:

- [Eurostat Information Society Indicators](#)
- [Digital Economy and Society Index \(DESI\)](#)
- [eGovernment Benchmark](#)
- [Repository of good practices on the EIF implementation](#)



## 2. Digital Transformation of Public Administrations

### Main Digital Strategies, Action Plans and Legislations

#### Ministry for Digitalisation Strategic Axes

On 11 January 2020, the Ministry for Digitalisation announced the **four strategic axes** to achieve a full transition to a digital government, setting the objectives and priorities for the upcoming years. The Ministry also announced that the objectives and the initiatives defined under each axis can only be achieved by applying a collaborative approach to innovation in general and by facilitating technological innovation. Following the legislative elections in 2023, the Ministry's strategic axes are the following:

- 1. Developing eGovernment;
- 2. Advancing administrative simplification;
- 3. Promoting digital inclusion; and
- 4. Ensuring data governance.

#### eGovernance Strategy 2021–2025

In February 2021, the Government Council adopted the **eGovernance Strategy 2021–2025**, jointly developed by the Ministry for Digitalisation and the Government IT Centre (*Centre des technologies de l'information de l'État*, CTIE). The Governing Council also mandated the Inter-ministerial Committee for Digitalisation to coordinate the implementation of this strategy.

One of the strategic axes of the Ministry for Digitalisation aims to strengthen eGovernment and enable the transition to a digital government, a concept which designates the use of technologies within the framework of State modernisation strategies with the objective of creating real added value for citizens, businesses and public administrations. The eGovernance Strategy forms part of this approach by setting the essential elements for a successful digital transition of the State to ensure quality digital services and to guarantee a gradual transition to a digital government, as recommended by international organisations. The 2021–2025 Strategy highlights the principles to be respected when digitising public services to offer citizens and businesses public services that meet their needs. The goal is promoting transversal digital accessibility, developing user-centred services, offering attractive online public services and investing in citizens' trust in online State services. Furthermore, the Strategy analyses the essential conditions for the central public administration so as to enable it to respond effectively to the needs of society. The overarching objectives in the digital context are to facilitate the transition to an efficient paperless administration and to have an information technology (IT) environment conducive to new ways of working.

Finally, the Strategy underlines the importance of being able to rely on a central IT partner who is competent, agile and reliable. To this aim, the CTIE aims to strengthen its digitalisation services, develop cutting-edge infrastructures and further guarantee very high levels of security and reliability.

#### Innovative Initiatives

Innovative Initiatives, previously known as Digital Luxembourg, is placed under the responsibility of the Department of Media, Connectivity and Digital Policy of the Ministry of State. It drives digital transformation by shaping policy, fostering partnerships, raising public awareness, and supporting projects and technologies with potential for innovation. Its efforts are focused on five key priority areas: digital skills, data policy, connectivity, technology and media.

#### Berlin Declaration on Digital Society and Value-Based Digital Government

On 8 December 2020, the Minister Delegate for Digitalisation signed the **Berlin Declaration on Digital Society and Value-Based Digital Government**. Following on from the Tallinn Declaration of 2017 and the European eGovernment Action Plan 2016–2020, the Declaration sets out common principles and objectives for a digital public administration based on the democratic values and fundamental rights established in particular in the Charter of Fundamental Rights of the European Union (EU).



## Lisbon Declaration

On 1 June 2021, Luxembourg signed the Lisbon Declaration – Digital Democracy with a Purpose, defining a new paradigm of digital transition. The Declaration was launched during the Leading the Digital Decade event on 1 June 2021, and was set up to reinforce the ‘European way of doing business’ as a world-wide recognised value proposition and a unique competitiveness advantage that elevates standards by:

- Balancing technological development with the respect for ethical principles and the promotion of human rights;
- Promoting digital international cooperation and multi-stakeholder approaches by joining the efforts of governments, public administration, enterprises, non-governmental organisations (NGOs), academia and citizens; and
- Fostering an economy based on green and digital technologies as enablers of social cohesion, prosperity, innovation and competitiveness.

## Digitalisation of Internal Processes



### LuxChat and Luxchat4Gov

In 2023, Luxembourg launched a sovereign chat application called LuxChat (based on the open source Matrix standards and using a fork of the Element app). Access to the application was initially reserved to public servants, but LuxChat was then rolled out to the cybersecurity community and is [now accessible](#) for any person working or living in Luxembourg.

LuxChat is based on the same standards as Luxchat4Gov. Luxchat4Gov is a service allowing public servants to instantly communicate between two or more people, while guaranteeing data sovereignty on Luxembourg territory and high security thanks to end-to-end encryption of all communications, operated solely in Luxembourgish data centres.

More information on Luxchat4Gov and LuxChat consult [Luxchat4Gov](#) managed by the Ministry for Digitalisation can be consulted [here](#). The service is free, without advertising and without the use of users’ personal data, with the utmost respect for their privacy.



### RACINE

RACINE is the secure inter-administration computer network connecting the buildings of the public administration. It allows administrations to access IT services and exchange data with the highest level of security. It also connects the internal State infrastructure to the outside world, i.e. it provides administrations with safe access to the internet and international networks. The network is set up and maintained by the CTIE.



### Document Management System Programme

In 2019, the CTIE launched an ambitious programme to replace the previous electronic document management tool with a new generation platform that can be used by all administrations and contribute to digital collaboration between the different State’s bodies. The project aims to implement a central platform offering all the functionalities necessary for electronic document and case management, and to deploy specific instances in each of the State entities.

The new Document Management System (DMS) has additional functionalities that go beyond a classic electronic document management tool and provides its users with case, process and workflow management. The new DMS focuses on document production, i.e. the creation of electronic documents, as well as their electronic signature and versioning. The component for the electronic management of documents was put into production in 2022. Moreover, a seamless integration with the State’s eArchiving solution is assured to guarantee the preservation and durability of the documents in accordance with legal obligations in terms of archiving.

With the entry into force of electronic invoicing, provided for by the law of 13 December 2021, the development teams implemented a module for the reception and centralised management of eInvoices. The module allows a homogenisation of the process of receipt of eInvoices based on the receipt, storage and management of all eInvoices transmitted to the Luxembourg State in a single and unique system. After deployment as a pilot by the Ministry for Digitalisation and the CTIE in 2022, the module with all Ministries and administrations was set up in 2023. However, the phase of development of HIVE is still ongoing. Each State administration should therefore have access to the module at the end of the deployment of this module and be able to familiarise themselves with the new software even before their dedicated on-boarding project is finished.



The module is financed by the Luxembourgish National Resilience and Recovery Plan.

### GovProject

To harmonise project management across the State ecosystem, in 2022 the CTIE began the implementation of GovProject. The project is intended to offer administrations a solution allowing them to manage all their projects, whether IT (according to the Quapital IT method) or not (according to the Quapital method), i.e. all the tools necessary to carry out their projects according to State standards. As a result, the tool now facilitates and standardises the day-to-day management of digital projects in the Luxembourg public sector. The project also introduced the mandatory completion of an interoperability questionnaire, with project managers now required to conduct an interoperability assessment of their projects prior to their respective launches.

The solution consists of three separate tools:

- GovProject Collaborate, i.e. a service allowing administrations to create collaborative sites dedicated to the exchange of documents and information as part of the implementation of a project. GovProject Collaborate has been available since the end of 2022 for all administrations;
- GovProject Centre, i.e. the new project portfolio management application in which administrations manage their projects. The platform is hosted at the CTIE and operated according to the Software-as-a-Service (SaaS) principle. Each interested administration can request to get access to the common application. The configuration is common to all user entities and allows a uniform application of Quapital and Quapital IT. However, certain adjustments (configurations) to project management practices of the administration are possible to adapt to the organisation. The CTIE has been using GovProject Centre to manage its entire project portfolio since June 2023; and
- GovProject Reports, i.e. a reporting application based on the CTIE's business intelligence platform. The application provides the necessary dashboards to track the progress of projects and monitor the health of portfolios. The application was rolled out to the CTIE and all its customers in June 2023.

Thanks to this set of tools, administrations benefit from:

- Easier management of their projects;
- Better planning and budgeting of their projects;
- Better compliance with constraints (costs, deadlines); and
- Increased visibility and transparency with regard to the status of projects and potential risks thanks to dashboards available in real time.

### Efficient and Interoperable Back-offices

The CTIE offers central platforms that can be used by any public administration on a Platform-as-a-Service (PaaS) basis, such as an electronic document and case management system or a business intelligence platform. Using the same platforms for the same type of administrative process improves interoperability in terms of inter-ministerial electronic workflows and data sharing.

Each administration is responsible for the legal, operational, semantic and technical aspects of its own base registries. However, most of the base registries and the related back-office applications are hosted on the infrastructure of the CTIE. They are implemented on a common development framework, which is also implemented and maintained by the CTIE. Hosting base registries and back-office applications in a single infrastructure, and using the same framework to implement them, naturally promote interoperability and thus the reuse of data between administrations. As such, the platform enables the exchange of data between different public and private interlocutors from isolated and secure base registries, in compliance with data protection regulations. A modern application programming interface (API) gateway allows data to be exchanged in an automated, standardised, secure and flexible way. In addition, back-office applications can be directly connected to the MyGuichet.lu front-end via web services and automatically retrieve administrative procedures submitted electronically by citizens and businesses.

### Generic Back Office for MyGuichet.lu

For more than ten years the CTIE has been providing a generic back office for MyGuichet.lu. This allows entities that do not have a custom back office to retrieve administrative procedures submitted electronically by citizens and businesses, and to communicate with them throughout the process. The generic back office can be put in place in very short time and is therefore a key enabler for the digitisation of public services. That way, the administrations and the CTIE can



focus on implementing the online web forms on the MyGuichet.lu front-end without worrying about the back-end.

## Digitalisation Supporting the EU Green Deal



### Circularity Dataset Initiative

The Circularity Dataset Initiative, launched in Luxembourg in 2018, resulted at the end of 2022 in the creation of the company [TerraMatters G.I.E](#), which was incorporated by the Ministry of Economy and the Chamber of Commerce. In 2023 TerraMatters started its task to commercialise a technical solution around the idea of the [Product Circularity Data Sheet](#) and to maintain an ecosystem around it. The goal is to set up an international communication scheme for the circular properties of a product in a bottom-up manner within a value chain.

### Sustainability Enablers Mapping

To find and adopt the right products, services, solutions and technologies that can help companies innovate to become more sustainable, Luxinnovation elaborated in 2023 the [sustainability enablers mapping](#). The exercise has identified especially those digital solutions providers that help other companies to become more sustainable by digitalising their production, processes or support services or by adopting more sustainable digital solutions (e.g. green data centres).



## 3. Interoperability and Data

### Interoperability Framework



#### Luxembourg National Interoperability Framework

The Luxembourg National Interoperability Framework (NIF) was adopted on 1 March 2019. It defines principles, objectives, governance and recommendations in the field of interoperability, and gives specific guidance on how to set up interoperable digital public services. More specifically, this framework, based on the [European Interoperability Framework \(EIF\)](#), offers public administrations concrete recommendations on how to improve interoperability in the field of digital government, and information and communication technology (ICT) in a sustainable and systematic way.

In 2019, the Ministry for Digitalisation set up a working group which in 2020 established an effective governance model for the NIF. In the framework of the NIF governance defined in 2020, the Sectorial Committee for Interoperability (CSI) of the central government was established and had its first meeting in April 2021. The action plan of the CSI of the central government, as well as the catalogues of interoperability (IOP) of the National Committee for Interoperability (CNI) were updated in July 2022.

As part of the NIF, NIF4Gov aims to support interoperability at the national level by setting up a framework to advice on projects selected by a jury and financed by the Ministry. In April 2022, the Ministry for Digitalisation launched a NIF4Gov call for projects. Two new projects were selected:

- The NIF#PRESERV project, proposed by the National Archives of Luxembourg, made progress on the definition of a policy and a strategy for the preservation of digital data for Luxembourg public sector bodies; and
- The REG4GOV project, proposed by the Ministry of Mobility and Public Works, developed a systematic and standardised approach to develop and implement base registries in line with regulatory requirements.

In 2023, the Ministry for Digitalisation launched a new NIF4Gov call for projects with the aim of finding new projects to support with a view to promoting interoperability within the Luxembourg public sector. The projects submitted were very diverse and the following found the consensus of the jury:

- MM.AET, a project by the Ministry of Economy to create a REST API allowing the direct consumption of data and documents stored in the Ministry's MM-AET database by information systems of other State bodies, thus avoiding paper transmission; and
- HVD4Gov, a project of the Information and Press Service aiming to inventory and make available high-value datasets as defined in Regulation (EU) 2023/138, including the establishment of the necessary infrastructure and processes.

### Data Access, Management and Reuse



#### Electronic Archiving

The [Law on Electronic Archiving](#) was adopted on 25 July 2015 (Law of 25 July 2015 relating to Electronic Archiving, and amending Article 1334 of the Civil Code, Article 16 of the Commercial Code and the amended Law of 5 April 1993 on the Financial Sector).

In the context of NIF#PRESERV, a project launched in 2022 by the National Archives of Luxembourg following their participation in a NIF4Gov call, a national digital preservation strategy for all public sector bodies was elaborated in 2023 and finalised beginning of 2024. The strategy was finally adopted by the CNI on 1 March 2024, with the support of all the different sectors represented in the CNI.



#### Synergy Group for Data Standards and the Data Catalogue

Within and around the Luxembourgish public sector, numerous stakeholders have been reflecting on how to enhance the value of public sector data. These reasonings are particularly crucial when considering European legislation, in particular Regulation (EU) 2018/1724

establishing a single digital gateway and Regulation (EU) 2022/868 on European data governance, which facilitates the reuse of public sector data by public sector entities across Member States, as well as by research and private sector actors.

To coordinate the various stakeholders involved in public sector data inventories and cataloguing, the Ministry for Digitalisation has **launched** the Synergy Group for Data Standards and the Data Catalogue, i.e. an informal working group aimed to create synergies around these reflections and facilitate an efficient, united and rapid transition towards a data-driven public sector. More concretely, the group leads an informed discussion on the semantic standards to be adopted and coordinates efforts by actors responsible for the inventory of public sector data with the aim of creating a transparent, understandable and usable national catalogue of public sector data.

### Data4Gov

In December 2023, the Ministry for Digitalisation launched the **first call for Data4Gov projects** to financially support and supervise data-driven public sector projects. The objective of the Data4Gov call for projects is to support initiatives that will lead to a data-driven public sector or a pro-active eGovernment. These may include, for example, data collection projects for the public sector or projects to improve the availability of data (for administrations, the general public, etc.). The first three selected projects started early 2024.

### Once-Only principle and Transparency Management

Luxembourg has been systematically implementing the **Once-Only principle (OOP)** for more than five years now. Via their personal space on **MyGuichet**, users have the possibility to access the data that public administrations keep on them online in more than 30 authentic sources. For some of these authentic sources, users can also request online the correction of data that they do not consider accurate and can reuse most of the data in the context of administrative procedures. Furthermore, for some of the authentic sources, they can check directly online what organisation has accessed their data and ask the organisation to justify their access, if they have legitimacy concerns.

As part of its action plan, the **CNI** has mandated the Once-Only Principle Transversal Thematic Working Group (GTTT OOP) to “systematise and accelerate the Once-Only approach”. The working group is made up of representatives of the different sectors of the CNI, as well as people from the Ministry for Digitalisation and other public sector bodies specifically chosen for their skills in this area. In addition, members of the Inter-ministerial Committee for Digitalisation, which has also included the Once-Only principle in its roadmap as a priority action, are also part of the working group. The coordination and the Secretariat of the GTTT OOP are provided by the Ministry for Digitalisation.

During the first meeting of the GTTT OOP on 21 March 2022, its members decided to first call on sub-groups to study within a small number of people certain more specific aspects of the Once-Only principle. Four sub-groups were created in 2022:

1. **Legislation Sub-group:** the sub-group analyses the opportunities, the challenges and the potential of the Once-Only principle from a legal point of view and reflects on possible solutions to generalise it at the level of the Luxembourg public sector;
2. **Automated/Proactive eGovernment Sub-group:** the sub-group first met on 6 July 2022 to launch a discussion on the topics of automation and proactivity of administrative procedures. Based on concrete life events (birth, death, etc.), the Sub-group decided to analyse the current state of the relevant procedures and the potential benefits of applying the Once-Only principle, as well as to propose trajectories for achieve its implementation. Throughout 2023, the Sub-group worked in the form of workshops to identify the current status of all administrative procedures linked to the birth of a child and the death of a beloved person. Based on the agreed status quo, the Sub-group worked on an alternative scenario for the same procedures bearing automation and pro-activity in mind. The outcomes for both strains will be challenged and refined by the members of the Sub-group in meetings throughout 2024;
3. **Data Intermediation Platform Sub-group:** the sub-group has the mandate to analyse the integration and implementation of a central data intermediation approach as well as its benefits for the Once-Only principle. During the first meeting on 14 July 2022, the Ministry for Digitalisation presented the preliminary results of the Data Broker Study;
4. **MyGuichet.lu - Once-Only Principle by Design Sub-group:** the sub-group has the mandate to (i) highlight the implementations and functionalities that already exist at the level of the generic back office of MyGuichet.lu in terms of the Once-Only principle; and (ii) analyse the





prerequisites for a more thorough and systematic integration within the framework of existing and future administrative procedures, with the aim of strengthening in particular transparency (e.g. monitoring of access to authentic sources or possibility of modifying incorrect data) and trust in reliable administrative management (accountability). In 2023, the functionalities of MyGuichet.lu were presented to the Sub-group during two dedicated meetings. The following discussions quickly showed which functionalities had sparked the interest of the members and which were still missing. During the first and the second quarter of 2024, the Sub-group is expected to present to the GTTT OOP its conclusions on how to strengthen MyGuichet.lu in terms of transparency, trust and the Once-only principle.

## Open Data

### Open Data Strategy

Luxembourg’s government adopted in 2022 an [Open Data Strategy](#), together with a five-year [roadmap](#). In a circular letter, the Prime Minister gave [official instructions](#) about concrete actions to be undertaken by governments’ organisations in this context.

### Reuse of Public Sector Information

On 11 November 2021, the Parliament adopted the [law](#) transposing Directive 2019/1024 on open data and the re-use of public sector information. Two key elements of the new law are (i) a significant extension of the scope, including henceforth public undertakings as well as research data; and (ii) the introduction of high-value datasets.

### Access to Information

The [Law relating to a Transparent and Open Administration](#) was adopted on 14 September 2018. The purpose of the new law was to define the framework for the implementation of a policy for opening citizens’ administrative documents held by government departments, municipalities, local authorities and public institutions, and placed under the supervision of the State or municipalities. Under the law, a newly created commission, the [Commission on Access to Documents](#) (*Commission d'accès aux documents*, CAD) issues opinions about matters regarding the application of the law to ensure the right of access to documents at the conditions foreseen by the law.

### Open Web Content

As a follow-up to an action adopted by the CNI, the Ministry for Digitalisation conducted a [study on the availability of web content in the Luxembourg public sector as open data](#), also known as the ‘Open Web Content’ Study. In consultation with various stakeholders, such as the CTIE, the Chamber of Deputies and the City of Luxembourg, web content production was inventoried. Then, on the basis of the needs and requests expressed and collected, the vision for the future availability of public sector web content as open data was drawn up and the necessary tools for its subsequent reuse were imagined. The final part of the study describes the efforts that the various stakeholders should make to move from the status quo to the envisaged solution. In 2024, the Ministry for Digitalisation will work on a proof of concept to start building the different components, and further investigate the opportunities and challenges of the matter at hand.

## Base Registries

The following table lists the Luxembourgish base registries:

National	
Business and Tax	<ul style="list-style-type: none"> <li>REGINE is the National Registry of Digital Company Identifiers, which is currently being replaced by the RP.REG. It is a database storing the company identification number (INE) of companies in Luxembourg. The REGINE Registry (RN.RPM) aims to automatically determine and allocate an INE on the occasion of any new registration by the REGINE Manager of a Client Legal Person (PM) concerned. Relevant and necessary information is managed through REGINE’s Minimalist Dataset.</li> </ul>




	<ul style="list-style-type: none"> <li>The <a href="#">Trade and Companies Registry</a> (<i>Registre de Commerce et des Sociétés</i>, RCS), managed by the Luxembourg Business Registries, is an official inventory of all natural and legal persons engaged in trade which helps to identify the persons whose registration or subscription is required by law. The main law regarding the Trade and Companies Registry is the amended <a href="#">Law on the Trade and Companies Registry and Companies' Accounting</a> of 19 December 2002.</li> </ul>
Transportation / vehicles	The amended <a href="#">Grand-Ducal Regulation</a> of 2 September 1993 authorises the creation and operation of a database of road vehicles, and their owners and holders on behalf of the Ministry of Transport, as well as the creation and operation of three databases for derived purposes on behalf of the Ministry of Foreign and European Affairs, the Registration Duties, Estates and VAT Authority, and the Customs and Excise Agency.
Land	The Land Registry of the Cadastre and Topography Administration provides details regarding the main functions of the Cadastre and Topography Administration. As a manager of reference land information and maps, the Cadastre and Topography Administration provides the geodata required for town and country planning, and enables the property market to function thanks to effective management of property ownership. It also includes provisions for access to the directories of notaries and other persons responsible for the creation or execution of the legal documents and introduces the national identification number of the parties in such documents. The Land Registry's main pieces of legislation are the amended <a href="#">Law on the Reorganisation of the Cadastre and Topography Administration</a> of 25 July 2002 and the <a href="#">Act on Land Registration</a> of 11 November 2003.
Population	The <a href="#">National Registry of Natural Persons (RNPP)</a> of the CTIE groups all data relating to the identification of natural persons (residents or non-residents) who are in contact with a national government administration or public body.
Other	<ul style="list-style-type: none"> <li>Luxembourg has an infrastructure network called <a href="#">RESTENA</a> connecting all government institutions. It is set up and maintained by the CTIE, and it is the communications system representing the network backbone for public administrations.</li> <li>The law of 20 December 2019 establishes a <a href="#">Central Registry of De Minimis Aid</a>. Any de minimis aid granted in accordance with Commission Regulation (EU) No. 1407/2013 of 18 December 2013 on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to de minimis aid shall be entered in a central registry of de minimis aid. The Minister of Economy is responsible for processing the information contained in the Central Registry of De Minimis Aid.</li> <li>The amended <a href="#">Law on the Organisation of the Criminal Record and the Exchange of Information Extracted from the Criminal Record between the Member States of the European Union</a> of 7 April 2009 (updated version of June 2019) provides details on the electronic Criminal Records, that are under the responsibility of the State General Prosecutor.</li> </ul> <p>Other base registries and the respective competent administration are:</p> <ul style="list-style-type: none"> <li>Registry of Educational Certificates - Ministry of Higher Education and Research;</li> <li>Database of Jobseekers - National Employment Agency;</li> <li>Database of Vacant Positions - National Employment Agency;</li> <li>Registry of Services for Elderly People - Ministry of Family Affairs, Integration and the Greater Region;</li> <li>Database of Nationality - Ministry of Justice;</li> <li>Central Registry of Last Wills and Testaments - Registration Duties, Estates and VAT Authority;</li> <li>Database of Identity Cards - Ministry of Home Affairs;</li> <li>Database of Certificates of Physical Fitness - Ministry of Sport;</li> <li>Database of Passports - Ministry of Foreign and European Affairs;</li> <li>Database of Resident Permits - Immigration Directorate;</li> <li>Database of Vaccinations against COVID-19 - Health Directorate;</li> </ul>



	<ul style="list-style-type: none"> <li>• Database of Infectious Diseases - Health Directorate;</li> <li>• Registry of Beneficial Owners - Luxembourg Business Registries;</li> <li>• Database of Business Permits - Ministry of Economy;</li> <li>• Registry of Legal Persons - CTIE;</li> <li>• Database of Businesses in the Food Sector - Government Commissariat for Quality, Fraud and Food Safety;</li> <li>• Database of Road Vehicles and their Owners and Holders - National Society of Automotive Traffic;</li> <li>• Database of Driving Licenses - National Society of Automotive Traffic;</li> <li>• Public Shipping Registry - Luxembourg Maritime Administration;</li> <li>• Inland Navigation Qualifications - Ministry of Mobility and Public Works;</li> <li>• Registry of Drone Operators and Certified Drones - Directorate of Civil Aviation;</li> <li>• Registry of Trusts and Fiduciary Contracts - Registration Duties, Estates and VAT Authority;</li> <li>• NACE Codes – National Statistics Institute (STATEC);</li> <li>• Firearms Licenses - Ministry of Justice.</li> </ul> <p>The CTIE hosts the infrastructure, the databases and the applications used to manage the base registries as well as the other back-office applications. Back-office applications retrieve information from base registries according to legislation either via classic web services or via the API Gateway. None of those base registries is accessible online.</p>
	<ul style="list-style-type: none"> <li>• Sub-national</li> </ul>
<p>Base Registries</p>	<ul style="list-style-type: none"> <li>• Communal Registry – Cadastre and Topography Administration.</li> </ul>

 **REG4GOV Project**

In 2022, the jury of the NIF4Gov call for projects selected a project submitted by the Ministry of Mobility and Public Works called 'REG4GOV', whose use case is the Ship and Internal Navigation Registry. REG4GOV aims to define, through the design and deployment of the methodological fragments and technologies needed, a systematic and standardised approach to develop and set up basic registries in accordance with regulatory requirements. In other words, it aims to design and implement a reference architecture dedicated to basic registries providing predefined elements to standardise and accelerate the design of future registries. By default, it integrates the interoperable aspects of the system, and is broken down into the regulatory, organisational, semantic, functional and technical dimensions. The project will make it possible, in particular, to make significant progress in terms of the Once-Only principle. Moreover, it is highly complementary to the work in progress on the Service Data Intermediation (SDI) and to the eGovernance Strategy 2021–2025, which considers base registries as a key enabler towards a fully digital administration. The CTIE strongly relies on this strategy when implementing new back offices for administrations by interconnecting them with base registries (see above about the reuse of data in the CTIE’s infrastructure).

 **Act on the Identification of Natural Persons, the National Registry of Natural Persons, the Identity Card and the Communal Registries of Natural Persons**

The National Registry of Natural Persons (Civil Registry or RNPP) is covered by the amended [Act on the Identification of Natural Persons](#) of 19 June 2013. The law encompasses the RNPP mandate to hold identifying information for natural persons, the data contained in the Registry (reference data such as ID number, name, surname, address, date and place of birth, family status, nationality, refugee status, sex, ID number of parents, ID number of children, date and place of death, and noblesse title), the Commission of the National Registry, the Communal Registries and their maintenance, the entries to be made in the Communal Registries, etc. Also, Article 4(2) prescribes that authentic data already contained in the RNPP must be reused by public administrations, and that administrations cannot ask citizens to produce more evidence to prove the exactitude of data already existing in the RNPP.

The national identification number which is given to every natural person registered in the RNPP is also a key building block in the single point of contact, MyGuichet.lu. With that number, every



user can be identified and given access to his/her authentic sources. Moreover, the national identification number allows to pre-fill online forms in MyGuichet.lu and therefore implements the Once-Only principle (see the eGovernance Strategy 2021-2025).

### Data Platforms and Portals

The following table lists the Luxembourgish data platforms and portals infrastructures:

<a href="https://data.public.lu">data.public.lu</a>	The use and reuse of data is driven forward in the context of the national Open Data Strategy. <a href="https://data.public.lu">data.public.lu</a> is the official portal for open data. Luxembourg ranked <a href="#">sixth in the field of open data environment</a> in the EU.
<a href="https://geoportail.lu">geoportail.lu</a>	Luxembourg’s national official geoportal, <a href="https://geoportail.lu">geoportail.lu</a> , is a governmental platform which gathers, describes and publishes geospatial data and related products. It has the great advantage of functioning as an integrator of the data supplied by various public actors, such as Ministries, administrations, public enterprises and municipalities, but also private firms. All the data are grouped and displayed together in the map portal. This collaboration has also helped to initiate common projects of data sharing, data creation, project management and knowledge transfer between all involved actors. In addition, on 29 December 2019 the government also launched a new <a href="#">mobile application</a> displaying topographic maps, aerial photos and cadastral parcels.
<a href="#">National Platform for Data Exchange</a>	The National Platform for Data Exchange ( <i>Plateforme nationale d’échange de données</i> , PNED) was established at the end of 2022 upon initiative of the Ministry of Higher Education and Research with the following missions: <ul style="list-style-type: none"> <li>• Covering the whole data value chain while having a central structure for the provision of the services needed;</li> <li>• Giving stakeholders in the public and research sectors the opportunity to use combined data sources while being compliant with data protection legislation; and</li> <li>• Being able to offer strong data partnerships to corporate partners in the context of public-private partnerships with a view to developing new and innovative data-driven services and products.</li> </ul> In addition, <a href="#">training stakeholders</a> in the field of data science and secondary use of data is also part of the missions of this newly created structure.

### Data Centres

Taking full advantage of its strategic location, and of massive private and public sector investments, Luxembourg has become a key hub for information and communication technology (ICT) with [highly secured data centres](#) by creating a strong general infrastructure and high-performance data centres. In fact, Luxembourg has the highest density of tier IV data centre infrastructures in Europe. These data centres use very large and continuously growing cloud technologies.

The electronic virtual archives of the [European Patent Office](#) and the backed-up IT infrastructure of the European Commission are already housed in Luxembourg’s data centres, which are operated by the CTIE.

In March 2023, Google announced the creation of a Google entity in Luxembourg, focusing on the security of cloud solutions. Furthermore, in the same year Clarence, the joint venture of LuxConnect and Proximus (Luxembourg and Belgium), announced the creation of a [sovereign cloud solution](#), tailored to the needs of private and public entities as well as international institutions and organisations. The CTIE plans to be among the first customers of the sovereign cloud solution as of 2024, offering it as a service to the other public administrations.

## Cross-border Infrastructures

The following table lists the European cross-border infrastructures of which Luxembourg is part:

European Business Registry	Luxembourg is part of the <a href="#">European Business Registry</a> .
EUCARIS	Since the early 90s, Luxembourg, together with other three EU Member States (Germany, Belgium and the Netherlands) and the United Kingdom, has been involved in the first form of cooperation in the field of data exchange regarding the <a href="#">European Car and Driving Licence Information System (EUCARIS)</a> , an organisation called after the name of the implemented system itself.
TESTA	The <a href="#">Trans European Services for Telematics between Administrations (TESTA) network</a> is used for a number of cross-border use cases.
European Blockchain Services Infrastructure (EBSI)	The Ministry for Digitalisation is involved at European level in the European Blockchain Partnership (EBP), a collaboration between 29 countries (EU Member States, Norway and Liechtenstein) and the European Commission which is setting up a European blockchain (European Blockchain Services Infrastructure, EBSI). This infrastructure distributed at European level will make it possible to launch interoperable and cross-border services, such as data notarisation and support for a digital identity. Since 2020, the Ministry has been operating an EBSI node in collaboration with INFRACHAIN, joining the 28 nodes already operational in various European countries. In 2020, the Ministry for Digitalisation, INFRACHAIN, the Luxembourg Institute of Science and Technology (LIST) and the Interdisciplinary Centre for Security, Reliability and Trust of the University of Luxembourg (SnT) partnered to develop the <a href="#">EBSILUX project</a> . Co-funded by the EU, this project integrates Luxembourg into the EBSI. More information on the EBSILUX project can be found <a href="#">here</a> .
Potential	The POTENTIAL Consortium brings together about twenty European countries around testing prototypes of the European digital wallet. The Ministry for Digitalisation fulfils the role of Single Point of Contact for Luxembourg. It participates in technical meetings dedicated to use cases, document development and critical proofreading work. It is also involved in the meetings of the Consortium's Steering Committee and Management Committee.



### Data Embassy

The Estonian government is using a data embassy infrastructure to host a copy of their most important servers and databases, and Luxembourg hosts this very first [Data Embassy](#) ever. In addition, the Grand Duchy of Luxembourg and the Principality of Monaco agreed in 2018 to launch a study to safeguard sensitive data in a Luxembourg data centre with immunity guarantees and privileges resembling those of the above-mentioned Data Embassy. In 2020, the Principality of Monaco announced that the country would opt for hosting a sovereign cloud while Luxembourg would host its digital twin. This would allow Monaco to have at least 120 km between two storage points, thus applying the recommended security standard. The decision to open the Data Embassy was sealed in July 2021, when Luxembourg Prime Minister Xavier Bettel and the Monegasque Minister of State Pierre Dartout signed an agreement regarding the hosting of Monegasque data and information systems in Luxembourg. The agreement was based on a declaration of intent dating from 2018.



### Digital Europe for All

Since the beginning of 2020, Luxembourg has been participating in the European Digital Europe for All (DE4A) project funded under the European Horizon 2020 programme. DE4A aims to set up, via a large-scale pilot involving many EU Member States, reusable solutions which make it possible to practically apply the Once-Only principle in the context of cross-border administrative procedures. The effective application of this principle is an essential element in the framework of a policy of administrative simplification and administrative burden reduction.





Many meetings were held in 2022 and at the beginning of 2023. Luxembourg also made a significant contribution in terms of solution designing, and proofreading and quality assurance of documents. The whole project and the pilot in which Luxembourg was participating - i.e. the establishment of a completely online procedure allowing the change of habitual residence across borders by reusing electronic supporting documents provided by the central system set up under DE4A – ended in May 2023.

The project has significantly helped to prepare and optimise work on the implementation of the Once Only Technical System (OOTS) as well as the digitalisation of several procedures in Annex II of the Single Digital Gateway.



### Cross-border eHealth Service

In June 2019, Luxembourg launched the EU's first cross-border eHealth service. This new feature of the eSanté Portal ensures a smooth and fast electronic exchange of patient summaries between various countries of the EU. More concretely, it ensures that any European patient visiting a doctor during their stay in Luxembourg are able to benefit from this service and request that their patient summary be shared with their doctor in another European country.

Among public support measures in the field of eHealth, the following are worth mentioning:

- The financial incentive scheme for Registration Authority/Personal Identity (RA/PID) solutions;
- The roll-out of the electronic vaccination record (*Carnet de Vaccination Électronique, CVE*): with the patient's consent, the vaccinating doctors participating in the roll-out create the electronic vaccination record and register the administered vaccine. The patient has access to his/her CVE and can ask to link it to his/her Shared Medical File (*Dossier de Soins Partagé, DSP*) so that information from the CVE can be directly viewed within the DSP;
- myHealth@EU, i.e. the European programme for the electronic cross-border exchange of patient summaries and electronic prescription of medication: the connectivity of Luxembourg's National Contact Point for eHealth has been extended to additional Member States, namely Portugal, the Netherlands and Spain, for the Public Service Access use case; and
- The call published in 2023 for the development and validation of innovative digital health solutions benefiting the national healthcare system (patients, healthcare professionals, payers, etc.), and research and innovation ecosystems (e.g. the Joint call Healthtech 2023 for research industry collaboration, see [research-industry-collaboration.lu](https://research-industry-collaboration.lu)).

With regard to private sector initiatives, some private labs have put in place tools allowing patients to access lab results.



## 4. Digital Transformation of Public Services



### Digital Public Services for Citizens



#### Einfach Lëtzebuerg

The government has been committed to administrative reform and simplification for several years now and much progress has already been made, notably under the programme *Einfach Lëtzebuerg*. Drawing on technological advances in particular, the programme aims to provide a simple and predictable framework for citizens and companies in their relations with the State. Any new project, legislation or procedure, or any adaptation of existing ones, when deemed necessary, needs to be considered in light of the 'digital' component.

Progress notwithstanding, the simplification of administrative formalities and procedures is continually evolving. According to the coalition agreement following the latest legislative elections, all Ministries and administrations have concrete digitalisation and simplification projects on their agenda. In this framework, in February 2022 the Ministry for Digitalisation launched the *Zesumme Vereinfachen* platform ([www.zesumme-vereinfachen.lu](http://www.zesumme-vereinfachen.lu)), that aims to enable its users to:

1. Submit contributions or proposals on topics related to administrative simplification;
2. Participate in projects linked to simplification by the various State entities;
3. Vote and comment on other users' suggestions;
4. Participate in surveys and polls; and
5. Participate in virtual and in-person co-creative workshops.

The Platform is intended to assist Ministries and administrations in their efforts to simplify administrative procedures. Administrative simplification can relate to existing administrative procedures, or new processes, services or products designed to simplify daily administrative life. Since the launch of the Platform, 3 800 user accounts have been created and seven projects have been implemented. In total, 17 384 visits were recorded in 2023.



#### Guichet.lu

On 17 November 2008, the government of Luxembourg launched the *Guichet.lu* portal, which targets both citizens and companies, and acts as a single point of contact (SPOC) for their interactions with the administrative bodies. The portal's primary objective is to improve the value and quality of eServices, integrating various administrative formalities on a single internet portal that gathers all relevant procedures, forms and information made available by the State.

As such, *Guichet.lu* comprises information on various topics and the related administrative procedures, grouped by ten major themes for citizens and ten major themes for companies, and provides access to public eServices through its interactive twin *MyGuichet.lu*. With an offer of functionalities that is constantly growing, the interactive portal *MyGuichet.lu* allows its users to:

- Carry out administrative procedures in a simple and transparent manner reusing their personal data from authentic sources;
- View their personal data held by official bodies through authentic sources, e.g. information on obtained housing aid;
- Receive electronic documents issued by official bodies (eDelivery); and
- Book an appointment online with administrative bodies.

To make full use of the different functionalities, such as authentic sources and eDelivery, users have to log in to their personal space with an electronic authentication certificate (*LuxTrust Token*, Smartcard, Signing Stick or ID Card). These certificates guarantee highly secure information exchanges and personal data confidentiality along with an eSignature.

The initiative can also be considered as an informational portal. Since the end of 2019, 24 descriptive factsheets on administrative procedures have been published in German plain language (*Leichte Sprache*) on the *Guichet.lu* information portal, with the aim to help people with limited reading and writing skills to navigate and get information through the portal. Moreover, since 2022 the *Guichet.lu* team has also published four procedures in French plain language (*facile à lire et à comprendre*).

In 2023, based on feedback from users of the portal, the CTIE revised the presentation and layout of the home page, the descriptions of procedures and the navigation. The design is uncluttered



and various accessibility parameters (such as contrast and line spacing) can be adapted by the web user using the new adjustment button in the header bar. In addition, a dedicated section provides easy access to the above-mentioned factsheets in plain language. Finally, the CTIE started a project to integrate a new low-code platform in the CTIE infrastructure. This will facilitate the transformation of PDF forms into true webforms that can easily be submitted through MyGuichet.lu (with better user experience and better accessibility).

Since the same year, citizens and businesses have benefited from a much improved user experience, which is better adapted to the new habits of internet users. One of the main features is the principle of responsive design. This means that the web interface can now be adapted to any type of device. Users can therefore connect to MyGuichet.lu from their smartphone, tablet or computer via the internet browser and use all the functions, wherever and whenever they want. They also have the option of using the MyGuichet.lu mobile application if they want to benefit from the native functions of mobile devices, but unlike before they are not obliged to do so if they want to complete their procedures on their smartphone or tablet. At the same time, major efforts have been made to improve accessibility, and the look and feel of the interface has been brought closer to that of the mobile application. This notwithstanding, those functionalities that are well known and appreciated by the public have remained the same.

### MyGuichet.lu Application

On 5 July 2021, Marc Hansen, Minister Delegate for Digitalisation, presented the new mobile application MyGuichet.lu, developed by the CTIE. This application allows citizens to access their private space in MyGuichet.lu using their smartphone or tablet. In a world which is increasingly focused on mobile solutions, this new means of access to MyGuichet.lu is a major achievement in the context of the commitment set out in the eGovernance Strategy 2021–2025 to offer citizens 'cross-media' accessibility of digital public services, accessible on smartphones and tablets. This is an essential step towards a modernisation of digital public services.

Since its launch, the MyGuichet.lu app has offered a number of procedures and functions:

- Carrying out and following up administrative procedures;
- Adding attachments using a mobile phone's camera;
- Consulting communications; and
- Directly accessing CovidCheck certificates.

The range of possible procedures from the MyGuichet.lu app has then been regularly expanded and personal data which was only available in the MyGuichet.lu private space is now visible also using the mobile application. Moreover, the functionality to electronically sign an online procedure via MyGuichet.lu has been integrated into the app. This new feature makes additional administrative procedures requiring an eSignature available through the app, such as the declaration of change of residence or postal voting requests for elections. Furthermore, the online payment functionality (by credit card or smartphone) allows the user to pay for his/her procedure directly through the app MyGuichet.lu. These two features make it possible to offer more online procedures through the app. Overall, the goal is to persuade more citizens/businesses to interact online with administrations.

Currently, people must have a private eSpace on MyGuichet.lu and pair it with the app before they can use all its features. To enable more citizens to use MyGuichet.lu, developments are underway to:

- Make the pairing between the private eSpace and the app optional, so that the user can then authenticate directly in the app and use all its features ; and
- Allow new users to register and create their private eSpace directly in the app.

In 2023, the two major functionalities were developed for the benefit of MyGuichet.lu users:

- New pairing mechanism: MyGuichet.lu users now have two ways to connect their personal space to the app to access all the functions and consult their data. They can either scan a QR code displayed in their personal space or connect directly with their LuxTrust product. Once the personal space and the app are paired, users can unlock the app with a secret code of their choice or with one of the biometric functions offered by their mobile device. They no longer need to authenticate with their LuxTrust product each time they want to use MyGuichet.lu;
- Push notifications: in some cases, MyGuichet.lu communicates directly with the user. In particular, an e-mail is sent when a request has been successfully submitted or when its status changes. Similarly, an e-mail is sent to users when they receive a new communication from an administration in their personal space. By activating push notifications, citizens can be informed of these events in real time without having to check their e-mail.



These developments address new trends in society, whereby mobile equipment is increasingly replacing conventional computers. This measure is directly in line with the eGovernance Strategy 2021–2025, which provides for the cross-media development of online public services and supports an omni-channel policy for the delivery of public services (by the end of 2023).

### [etat.public.lu](https://etat.public.lu)

The [etat.public.lu website](https://etat.public.lu) is a directory of all Luxembourgish public websites, which are grouped by theme into three categories: State affairs, online portals and Ministries. It also provides all Ministries and administrations' phone numbers. Furthermore, newly launched websites are highlighted.

### [gouvernement.lu](https://gouvernement.lu)

The [website gouvernement.lu](https://gouvernement.lu) is the information portal of the government press and information office. It gathers all information – such as news and press releases – concerning the Luxembourg government. The portal was relaunched in February 2018, making it available in four different languages: French, German, English and Luxembourgish.

### [Payconiq](https://payconiq.lu)

A solution allowing the use of [Payconiq](https://payconiq.lu) for electronic payments on MyGuichet.lu was set up in collaboration with the CTIE, enabling users to make payments to different administrations, such as:

- Motor vehicle taxes (Customs and Excise Agency);
- Certain fines (Grand-Ducal Police); and
- [eID and passport](#).

The online payment functionality (by credit card or smartphone) allows the user to pay for his/her procedure directly through the MyGuichet.lu app. This feature makes it possible to offer more online procedures through the app to persuade more citizens/businesses to interact online with administrations.

### [Luxchat](https://luxchat.lu)

In 2023, the LU-CIX Economic Interest Group (GIE), the Ministry for Digitalisation and the Chamber of Commerce, in collaboration with Luxchat providers, [launched](#) the [Luxchat](https://luxchat.lu) application, i.e. a trusted national instant messaging service in Luxembourg. The platform guarantees the security and complete encryption of exchanges, aimed at serving both the general public and businesses. With this initiative, the partners are expressing their desire to provide a national alternative to existing instant messaging applications, whose business model is often based on the monetisation of user data. Luxchat is now available to all citizens free of charge.

## eInvoicing

### [eInvoicing Legislation](#)

The [Law of 16 May 2019 on Electronic Invoicing in Public Procurement and Concession Contracts](#) was approved by the Parliament on 26 March 2019. It transposed into Luxembourgish law [Directive 2014/55/EU of the European Parliament and of the Council of 16 April 2014 on electronic invoicing in public procurement](#).

The law establishes for all eInvoices issued under a public contract or a concession contract an obligation for contracting authorities and contracting entities to receive and process them in electronic form, provided they comply with the European standard on electronic invoicing and one of the syntaxes appearing on the list published by the European Commission. This obligation on the part of contracting authorities and contracting entities obviously entails that the undertakings concerned have the right to send compliant eInvoices and no longer have to provide invoices in paper format or in another electronic format.

The [law](#) of 13 December 2021 amending the Law of 16 May 2019 on Electronic Invoicing in Public Procurement and Concession Contracts aims to make electronic invoicing mandatory in B2G transactions to contribute to the reduction of the administrative burden on back offices, while digitalising the invoicing process. The government thus intends to create the starting conditions that will facilitate and make more efficient a complete digitalisation and a more extensive automation of the processes of verification, validation and payment of invoices at the level of public sector bodies. This will result in shorter payment terms, and more systematic digitisation and automation of public procurement, the direct consequence of which will be a gain in efficiency



and a reduction in the administrative burden for companies. The main objective is to “contribute, via an improvement in business productivity, to increasing the competitiveness of the private sector and therefore the competitiveness of the Luxembourg economy in general”. In particular, the law provides for the following obligations:

- For economic operators: to issue and transmit only compliant eInvoices, i.e. XML files or files containing XML, in the context of public procurement;
- For public sector bodies: to use the common delivery network for the automated receipt of eInvoices, i.e. Peppol, and, as long as they do not have their own access point to Peppol, the access point of the CTIE; and
- For Ministries and State administrations: to use the CTIE’s access point to Peppol.

While the number of eInvoices issued and sent to public sector bodies was negligible before the entry into force of the amended law, in the meantime more than 750 public sector bodies can receive eInvoices via Peppol and around 1 million eInvoices were received by public sector bodies in 2023.

### Peppol

The Peppol access point, which allows to receive and process eInvoices in the context of public procurement, was implemented at the end of 2016. This platform is adapted and amended regularly to keep up with users’ needs.

Also, in 2023 the Ministry for Digitalisation became the Peppol authority for Luxembourg, coming to be one of the twenty Peppol authorities.

## eHealth and social security

### National eHealth Strategy

With the aim of drawing up the National Health Plan until 2023, the Ministers of Health and Social Security brought together in 2020 the key players in the Luxembourg health system within the framework of the ‘Gesondheetsdësch’. The involved actors formed six thematic groups, including one dedicated to the use of new technologies in the field of health, to jointly identify the challenges, analyse the different possible scenarios and propose priority measures. Projects emerging from this working group include the following: (i) the establishment of an inter-ministerial committee responsible for coordinating digitisation in the field of eHealth in line with the National eHealth Strategy; (ii) the establishment of a permanent committee responsible for promoting and coordinating innovation in the field of health; (iii) the proposal of an updated National eHealth Strategy to be integrated into the National Health Plan; and (iv) the implementation of a roadmap adapted to digital health.

More in general, the government continues promoting the National eHealth Strategy to facilitate the exchange and secure electronic sharing of health data between health professionals and patients, and also to enable better monitoring and better coordination of the patients’ healthcare. In pursuit of this objective, the [National Agency for Shared Health Information \(eSanté\)](#) has developed and implemented the National eHealth Platform, which includes basic urban development components to provide various services to patients, healthcare providers and suppliers of digital health solutions. New eHealth services launched in 2020 through the National eHealth Platform include a teleconsultation and telemonitoring system, as well as an electronic vaccination card which is currently in a pilot phase. Furthermore, since the end of 2019, eSanté has gradually deployed the DSP to all persons affiliated with Luxembourg social security. The DSP is a free, personal and secure electronic health record centralising essential patient health data in one place. The DSP and the associated ‘My DSP’ communication campaign were presented in October 2020 by Paulette Lenert, Minister of Health and Minister Delegate for Social Security, and Romain Schneider, Minister of Social Security.

### sante.lu

sante.lu is the official portal for all health-related topics.

### Digital Mandate

The Ministry for Digitalisation was awarded the bronze medal at the 2023 Seoul Smart City Prize for the introduction of a digital mandate on the MyGuichet.lu platform as one of the 40 initiatives of the National Action Plan for Digital Inclusion. This forward-thinking project aims to empower individuals who may face digital barriers, enabling a third party to carry out administrative procedures on their behalf. The Digital Mandate is a crucial step forward in



Luxembourg's mission to bridge the digital divide. By acknowledging and addressing the challenges faced by those who are digitally excluded, the initiative aligns with broader efforts to ensure that technological advancements do not leave anyone behind. Beyond the technical and legal aspects, the Digital Mandate reflects a commitment to social equity and the empowerment of individuals who may struggle with digital interfaces. As the CTIE delves into the technical adaptation of the MyGuichet platform, Luxembourg stands at the forefront of innovative solutions that not only simplify administrative processes but also foster a more inclusive and accessible digital landscape for all its citizens.

The origins of this initiative can be traced back to collaborative discussions with various stakeholders from civil society. Recognising the challenges faced by digitally excluded individuals, particularly in navigating secure platforms and authentication processes, Luxembourg sought a solution that would not only address these issues but also establish a legal framework for such practices. The need for a digital mandate had become apparent as family members or social workers often found themselves using the authentication tools of digitally excluded individuals to access and complete administrative tasks, albeit without a clear legal basis.

To address this, in 2022 Luxembourg embarked on a comprehensive legal analysis, engaging the expertise of the Thewes&Reuter legal firm. The study concluded that few legal obstacles existed to implement a digital mandate, laying the foundation for a more inclusive and legally sound approach to administrative procedures. In the same year, the initiative progressed further with the completion of a legal and technical feasibility study. The study's outcomes not only validated the legal viability of the initiative but also demonstrated Luxembourg's commitment to overcoming technical challenges in the pursuit of digital inclusivity, paving the way for the CTIE to prepare the implementation of the Digital Mandate on the MyGuichet platform. The MyGuichet.lu platform is set to undergo multi-layered, technical adaptations to accommodate the new Digital Mandate functionalities. The CTIE is now studying the technical aspects to adapt MyGuichet.lu, with implementation scheduled for the end of 2025.

## Other Key Initiatives



### [luxembourg.lu](https://www.luxembourg.lu)

The official portal of the Grand Duchy of Luxembourg offers general information on various subjects, together with a thematic directory of links that guides users to sites that offer detailed information on their topic(s) of interest. This site is useful not only for the inhabitants of Luxembourg, but also for the consular and diplomatic network as well as any foreigners wishing to find pertinent information on Luxembourg.



### [transports.public.lu](https://transports.public.lu) and [mobiliteit.lu](https://mobiliteit.lu)

[transports.public.lu](https://transports.public.lu) and [mobiliteit.lu](https://mobiliteit.lu) are the official portals for transport-related subjects in Luxembourg. On [mobiliteit.lu](https://mobiliteit.lu), users can interact and ask any questions related to public transport in Luxembourg. Buses, trams and trains' schedules can be checked in real time. Through the portal, users can also access various services on Guichet.lu.



### [justice.lu](https://justice.lu)

[Justice.lu](https://justice.lu) is the official portal of the courts and of the judicial system for all topics related to the judiciary.



### [legilux.lu](https://legilux.lu)

[legilux.lu](https://legilux.lu) is the official legal journal of the Grand Duchy of Luxembourg, i.e. the portal where all laws and other legal norms are officially published.



### [chd.lu](https://chd.lu)

[chd.lu](https://chd.lu) is the Parliament's website. All parliamentary work is available for public consultation, including law projects and sessions. Public petitions can also be signed online.



### [Zesumme Vereinfachen](https://www.yourideas.lu)

The platform [Your Ideas \(Vos Idées\)](https://www.yourideas.lu), created in 2014, allows the government to collect public proposals and suggestions. Based on collaboration and exchange of ideas, it invites citizens to contribute to and thus actively take part in the digital transformation process of public services.



After a review by the Ministry for Digitalisation, the platform evolved into [Zesummevereinfachen.lu](#). It is expected to gather feedback from citizens and companies on specific administrative processes. This platform was presented to the public in February 2022.

### National Portal for Public Inquiries

The [national portal for public inquiries](#), available in four languages (French, German, English and Luxembourgish), allows citizens to find out about public inquiries in progress. It also presents official notices relating to public inquiries and administrative decisions. In addition, it offers interested parties an explanatory guide to administrative procedures and an agenda of the planned information meetings, as well as the contact details and hours of entities organising hotlines.

Out of 62 administrative procedures that could trigger a public inquiry, 24 (39%) were deployed on the portal at the end of December 2022. Some 250 public inquiries were posted on the portal during the same year.

### [communes.lu](#)

[communes.lu](#), edited by the Association of Luxembourg's Cities and Municipalities (Syvicol), is the official portal of the municipalities with, among others, links to their specific websites.

## Digital Public Services for Businesses

### eDouane

[eDouane](#) is an interactive platform for online services that enables businesses to process online all customs-related paperwork regarding the Grand Duchy of Luxembourg. The portal was completely relaunched in September 2018.

### Luxembourg Customs Clearance System

In 2023, the new customs clearance system was officially commissioned and four of the IT projects of the [Luxembourg Customs Clearance System \(LUCCS\) Programme](#) were completed:

- Managing the entry of goods into the EU;
- Managing procedures for importing goods;
- Controlling imports before goods arrive; and
- Managing goods in transit.

LUCCS is a flagship programme for the Luxembourg public administration. The Customs and Excise Agency and the CTIE, which are jointly leading the programme, have faced major challenges linked to the exceptional scale of this ambitious project, which involves renewing all customs systems.

The LUCCS Programme is also part of the European Commission's work programme to design and implement the electronic systems foreseen in the EU Customs Code, in particular to simplify procedures and facilitate legitimate trade. For the logistics, transport and eCommerce sectors, the new LUCCS system offers the advantage of a one-stop shop. Companies can access a platform with a uniform layout across the EU, and this simplifies customs formalities, facilitates automatic data exchange and promotes cooperation with other authorities.

## Public Procurement

### Law on eProcurement

The Luxembourg Parliament adopted a new law on public procurement in 2018, the [amended Act on Public Procurement](#) of 8 April 2018. This law has four main objectives:

- Enabling public markets to become an instrument of political strategy;
- Introducing simplification measures;
- Preventing conflicts of interest, favouritism and corruption; and
- Clarifying certain rules.

### Public Procurement Portal

A [central public procurement portal](#) was created in February 2006. This portal includes an informative part on legal issues related to eProcurement, as well as a platform for (i) publication



of calls for tender, tender documents and terms of reference; (ii) electronic submission of tenders; (iii) electronic catalogues; and (iv) electronic auctions. As such, the platform provides businesses with a one-stop research and notification tool on opportunities in the public sector.

In 2023 a new version of the Public Procurement Portal was put online. Several changes were introduced with the migration to the new version. On a functional level, the interfaces were updated and additional functionalities were added to better adapt the online forms to the public procurement process. This will make the work of public purchasers more efficient and facilitate their interaction with economic operators. On a technical level, given the critical nature of the portal, its IT architecture converged towards technological standards allowing industrial deployment and guaranteeing high availability of the online service.

On the regulatory side, the aim at European level is to significantly reduce the administrative burden and facilitate the participation of economic operators in cross-border tenders by introducing a Luxembourg module for the Single European Market Document (DUME) and overhauling the 'eForms'. DUME consists of a declaration on the honour of the economic operator by which he/she certifies, in accordance with the applicable law, that he/she meets the selection criteria for an invitation to tender and that he/she is not in a situation which would lead to his/her exclusion. This is a European instrument which, in accordance with the Once-Only principle, should reduce the amount of redundant information to be provided by economic operators and facilitate their participation in cross-border calls for tenders. The standardised forms for the publication of public procurement notices in the Official Journal of the European Union were also revised at national level. This module, which is directly integrated into the Public Procurement Portal, will facilitate the electronic transmission of European contract notices from the Luxembourg platform to the Publications Office of the European Union, considerably reducing the administrative burden for public purchasers.

Pending the launch of the new version of the Public Procurement Portal and the implementation of the Luxembourg module for DUME, public purchasers and economic operators were obliged to use the Belgian online service. From now on, the service will be integrated directly into the portal, making the electronic public procurement process even more fluid.

## Digital Inclusion and Digital Skills

### Digital4Education Strategy

On 20 May 2015, the Minister of Education, Children and Youth presented the digital strategy for education called '[Digital4Education](#)'. This strategy had two key objectives:

- Preparing young people for work in a complex and constantly changing environment; and
- Promoting new learning strategies, as well as software and innovating educational projects.

Projects under the Digital4Education Strategy include: (i) training teaching staff and offering access to digital teaching resources as part of eduSphere; (ii) introducing a maths-teaching software (for cycle 4) to be used at home and at school as part of [MathemaTIC](#); and (iii) providing comprehensive computer literacy training and enabling students to better manage their lives through digital tools in the framework of [Digital Classroom Lëtzebuerg](#). Further projects include the FutureHub labels for schools committed to new technologies and an online teaching/learning platform.

In January 2020, the Minister of Education, Children and Youth also introduced coding in all mathematics classes throughout cycle 4 and 5 of the basic educational programme. The development of digital skills, particularly coding and computational thinking, is now seen as a fundamental precondition for schools wishing to effectively prepare young people for the careers of tomorrow, which will continuously require more and more digital skills. Thus, digital, computational and coding skills will systematically be taught throughout the primary and secondary education programmes in public schools. As part of the Code Week 2020, the Ministry also organised coding workshops with high schools and primary schools. In that context, a 'matchmaker' platform was setup with the contribution of Digital Luxembourg, allowing teachers who want to organise coding workshops and need experienced assistance to register for an appointment with IT volunteers.

In 2023, the Ministry of Education, Children and Youth did not introduce specific new measures, but consolidated the measures already in place, like the National Media Literacy Framework (*Medienkompass*), including data and artificial intelligence (AI) literacy, and the national implementation of the new course 'Digital Sciences' in lower secondary education. Furthermore, the Ministry organised a national Cybersecurity Challenge for primary education as well as a German-Luxembourgish Cybersecurity Challenge for secondary classes.





## Einfach Digital

In February 2020, the government presented **Einfach Digital**, a new approach to digitalisation in the classroom focused on critical thinking, creativity, communication, collaboration and coding. Einfach Digital represents the next generation in the Ministry of Education's digitalisation approach, thus replacing the Digital4Education strategy. The objective is to allow all Luxembourg's children and young adults to learn how computers work. The measures taken are part of the Media Compass (*Medienkompass*), a reference framework issued by the Ministry in March 2020 providing guidelines to schoolteachers. Within the framework of the Einfach Digital initiative, a campaign on media use addressed to parents has also been launched.

## National Action Plan for Digital Inclusion

One of the main strategic axes of the Ministry for Digitalisation is the promotion of digital inclusion, a process which aims to make digital technology accessible to each individual, to give every individual the same opportunities to participate in the digital society and to counteract the digital divide. In this field, the **National Policy on eParticipation and/or Inclusion** as well as a **Web Strategy** focusing on web accessibility have existed for more than 15 years now.

In addition, in close consultation with an interdepartmental working group, and with the help of bilateral exchanges with associations and various non-State actors close to populations which may be isolated from the digital world, the Ministry for Digitalisation drew up the National Action Plan for Digital Inclusion. Published in September 2021, it includes 40 concrete initiatives by the Ministry for Digitalisation and the actors involved in the development of the Action Plan. The initiatives are spread over three strategic axes to improve digital inclusion in Luxembourg and avoid a widening of the digital divide. The three strategic axes are (i) increasing digital motivation and building digital confidence; (ii) facilitating digital access; and (iii) developing digital skills. In particular, the third strategic axis focuses on the development of digital skills and digital citizenship to enable individuals to navigate the digital world in a more autonomous and safer way, regardless of their age, level of education or gender. The following initiatives form part of the National Action Plan for Digital Inclusion and were implemented by, or are currently ongoing within, the Ministry for Digitalisation:

- Launch of a web portal dedicated to digital inclusion;
- Launch of an annual call for projects for pilot projects in the field of digital inclusion;
- Organisation of a day dedicated to digital inclusion on 17 May;
- Provision of digital skills training and 'train the trainers' modules;
- Analysis of the impact of digital developments on citizens;
- Introduction of a digital mandate for people that cannot use digital public services;
- Establishment of a research programme on the user-friendliness of digital public services;
- Animation of an interdisciplinary forum on digital inclusion;
- Continuous development of the mobile app MyGuichet.lu;
- Promotion of easy-to-read language on Guichet.lu;
- Reinforcement of the accessibility of digital State services and products;
- Educational support to access digital government services; and
- Access to public services via the GouvID app.

As part of the implementation of the National Action Plan for Digital Inclusion, the Ministry for Digitalisation launched a call for projects to finance pilot projects promoting digital inclusion in Luxembourg for the years 2022–2023. The call for projects was addressed to associations, private organisations, public institutions, municipalities, inter-municipal unions, professional chambers, training centres and public research institutes that are committed to digital inclusion. The projects submitted must fall within the scope of one or more of the three strategic axes.

With the help of the interdepartmental working group, the Ministry for Digitalisation will continue monitoring the implementation of the National Action Plan for Digital Inclusion and annually assessing the progress of the various initiatives.

## Accessibility of the Websites and Mobile Applications of Public Sector Bodies

On 7 May 2019, the Parliament passed the **Law on the Accessibility of the Websites and Mobile Applications of Public Sector Bodies**. This law transposed into Luxembourgish law Directive (EU) 2102/2016 of 26 October 2016 on the accessibility of the websites and mobile applications of

public sector bodies. It supports the objectives of the Digital Luxembourg government strategy to promote access to new technologies for every citizen.

Though the text focuses on accessibility for people with disabilities, it ultimately benefits all citizens. Indeed, everyone should benefit from improved access to public sector services via websites and mobile applications, and from services and information that facilitate their daily lives and the exercise of their rights at the public level and at Union level, including the right to move and reside freely within the territory of the Union, and the right to freedom of establishment and freedom to provide services.

In this context, the Information and Press Service (SIP) has the responsibility to verify every year a certain number of websites and applications provided by the public sector organisations and to assume a role in the sensibilisation efforts. All documents concerning this activity are available publicly [here](#) and [here](#).





## 5. Trust and Cybersecurity

### eID and Trust Services



#### GouvID App

In February 2022, the competent Ministry launched the new GouvID mobile app, developed by the CTIE. This app offers citizens the possibility to use their electronic identity (eID) card in conjunction with their smartphone. More concretely, the **GouvID app** enables citizens to use their Luxembourgish eID together with their smartphone to identify themselves on a PC or tablet to certain online public services such as MyGuichet.lu. The GouvID app can also be used to sign, after completion, MyGuichet.lu procedures requiring an eSignature. The advantages are:

- No need for a specific card reader, as the smartphone works as a contactless card reader;
- Always at hand, as the connection is made through the user's ID card and smartphone; and
- Easy to use, as GouvID allows users to use the biometric features (facial recognition, fingerprint, etc.) of the smartphone to log in without having to use the PIN code of the identity card.

Detailed information and video tutorials are available at [www.gouvid.lu](http://www.gouvid.lu).



#### eWallet

A national eWallet is currently being developed allowing users to manage and present digital certificates of official documents (principle of Self-Sovereign Identity) on their smartphones. This is a first step to be able, in the future, to exchange verifiable credentials established on the basis of digital certificates. A first version will support the ID card and the driving license. The major features are:

- Certified and secure user authentication;
- Storage of official documents in the form of digital certificates;
- Control and verification of the aforementioned documents using a smartphone and the GouvCheck app;
- Future integration into the Luxembourgish Police verification applications; and
- Operation in offline mode in a face-to-face mode.

In 2023, the Ministry for Digitalisation joined the largest of the four large-scale pilot consortia for the EU Digital Identity Wallet. Called POTENTIAL, this large-scale pilot aims at testing either national prototype solutions or a European reference implementation of the EU Digital Identity Wallet, depending on the level of maturity of the country. The CTIE also joined the POTENTIAL consortium as a beneficiary. The use cases that Luxembourg is contributing to are eGovernment services, bank account opening, mobile driving license and qualified eSignature.



#### GouvCheck

The CTIE launched **GouvCheck**, a mobile application allowing any person to verify the authenticity of an official document issued by an administrative body. Currently, 35 official documents carry a GouvCheck QR Code, whose authenticity can be verified by scanning the QR code (on the document) with the GouvCheck app.

More specifically, GouvCheck allows to print out an electronically signed document, and still be able to verify the eSignature and the authenticity of the information on the document. To that end, a GouvCheck QR Code is put on the document, for example a certificate of residence. Anybody who wants to check the authenticity of the document (civil agent, citizen or others) downloads the GouvCheck app and scans the QR code. The app validates the eSignature contained in the QR code and displays additional information that is also included in the QR code. This information should also be present in clear text on the document. The user can then compare this information, and make sure that the QR code and the document belong together.



#### Draft Law on the Electronic Signature of Administrative Documents and Secure Platform for Public Documents

To facilitate and accelerate the transmission of administrative documents between the government and the various State administrations and services, as well as between the State services and citizens, it is proposed to introduce the possibility of affixing an eSignature and an



eSeal in administrative matters. The amended Law of 14 August 2000 on Electronic Commerce already provides for the option of using an eSignature for private documents. Similarly, the Draft Law on the Electronic Signature of Administrative Documents provides for the possibility of affixing electronic signatures or seals to administrative documents issued by administrative authorities and to transmit them electronically. Through its various provisions, the draft law, together with the Secure Platform for Public Documents, will contribute to the digitalisation of the public administration, by facilitating the conclusion of administrative acts in digital format. That way, many internal procedures and procedures based on a signed act can be digitised.

The purpose of affixing a digital identifier to a public document is to guarantee digital inclusion by allowing to continue making the various documents and files available in paper form to citizens who cannot or do not wish to opt for a digital approach, while guaranteeing the possibility for the administrative authorities and other entities to electronically sign administrative acts. The digital identifier thus allows any citizen to whom the document is addressed, and any administration to which a citizen presents a copy of the act, to access the place where the original document is stored and to become acquainted with it. In this context, the Secure Platform for Public Documents will allow (i) the affixing of digital identifiers on public documents; (ii) the electronic storage of originals with a digital identifier; and (iii) access to the storage location through a digital ID. The draft law and the platform will be adopted in 2024.

### Electronic Signature Verification and Validation Platform

With the aforementioned Draft Law on the Electronic Signature of Administrative Documents and Secure Platform for Public Documents, providing for the possibility to use qualified eSignatures in administrative matters, the needs in terms of verification of eSignatures will increase. The Electronic Signature Verification and Validation Platform addresses those needs. This new platform aims to allow civil servants to verify and validate eSignatures of all European countries in accordance with the requirements of the Regulation on electronic identification and trust services for electronic transactions in the internal market (eIDAS Regulation). The user uploads the document to the platform, which validates the electronic signatures, stamps and timestamps present on the document on the basis of the European trusted lists. The platform then presents the results of the validation in a simplified way, and allows to download a detailed report and print the validation summary in a print-friendly format. After the validation report is issued, the document is destroyed automatically on the platform.

### eIDAS

The [Law of 17 July 2020](#) modified the amended Law of 14 August 2000 on Electronic Commerce (the eCommerce law) bringing it into line with the eIDAS Regulation. The new law represents the last piece in Luxembourg's comprehensive and robust legal framework on trust services (including eSignatures and eArchiving).

In 2021, the European Commission published a proposal to revise the eIDAS Regulation. The proposal provides for the federated electronic authentication and signature service to evolve towards interoperable electronic wallets at European level. In this context, a technical group is developing a technical concept (toolbox), with the contribution of the Ministry for Digitalisation and the CTIE. The Ministry for Digitalisation and the CTIE also take part in the consortium 'Pilots for the European Digital Identity Wallet' (POTENTIAL). The latter submitted a project which was selected in December 2022 by the European Commission to pilot new European prototypes around the EU Digital Identity Wallet. 148 participants from 19 EU Member States and Ukraine joined forces in the POTENTIAL consortium to pilot the new EU Digital Identity Wallet (EUDIW) prototypes through test use cases (eGovernment services, bank account opening, mobile driving license and remote qualified eSignature). The mission is to shape and implement scenarios to test the EU Digital Identity Wallet launched by the European Commission. The project aims to improve citizens' access to reliable and secure electronic identity means and services such as electronic signatures or attestation attributes. This will allow citizens to store their identity in a secure digital wallet valid across borders.

### eCommerce Law

The [amended eCommerce Law](#) of 14 August 2000, complemented by the [Regulation on Electronic Signatures and Electronic Payments](#) of 1 June 2001, transposed the [EU Directive on Electronic Signatures](#) (1999/93/EC). The act's primary importance resides in the recognition of eSignatures and eContracts. Unlike the directive it was based on, it does not use the term 'advanced' eSignature but rather recognises a 'qualified' level of eSignature. It also differs from the Directive and similar legislation in other Member States insofar as it legally recognises eWills



and eDeeds and implements the customer's right to withdraw from an eContract within seven days of its creation, free of questions and penalties, with full reimbursement of any money paid to the seller. Differently, the act closely follows the Directive in terms of information requirements from seller to customer, the seller's obligation to acknowledge reception of an order, the rules governing the liability and confidentiality requirements for certificate issuers (domestic and foreign), and provisions concerning the auditing and accreditation of certificate issuers. Certification service providers can only issue certificates with the approval of the National Accreditation and Supervision Authority. Approved (qualified) certificates are valid for a maximum duration of three years and must be archived by the certification service provider for at least ten years. Certification providers also have to undergo periodic external security audits.

### eID and eSignature

In Luxembourg, a common national eSignature, used by both the public and private sectors, and managed by the private company **LuxTrust**, has been available for more than ten years. LuxTrust is the central eIdentity infrastructure in Luxembourg providing several products connected to a person, such as tokens, smartcards or signing sticks. It is a public/private partnership created to manage the development of a common Public Key Infrastructure (PKI) in order to secure eCommerce and eGovernment in Luxembourg. The consortium that was awarded the PKI contract was presented in July 2006. LuxTrust has become the standard solution used for qualified eID and eSignature in the context of online administrative procedures. At the same time, any EU citizen and business can use their own national eID scheme (if notified) to access public services on the personalised platform MyGuichet in Luxembourg. LuxTrust is also used by all important banks for online banking, and it is therefore offered by banks to their clients free of charge. Furthermore, the progressive introduction of biometric documents in Europe forces Member States to have highly secure certification services to protect their official documents. Consequently, LuxTrust will adhere to the relevant international standards to be in a position to protect the biometric documents issued in Luxembourg. This will initially apply to biometric passports.

In 2023, the Ministry for Digitalisation continued the promotion of the national GouvID app. Launched in 2022, this mobile app allows citizens of Luxembourg to use their physical ID card and its electronic certificates both for online authentication and remote electronic signature on the eGovernment portal MyGuichet.lu. In the beginning of 2023, the GouvID app had been downloaded approximately 30 000 times (which accounts for around 10% of Luxembourg ID Card holders).

In the same year, the Ministry for Digitalisation also joined the largest of the four large-scale pilot consortia for the EU Digital Identity Wallet. Called POTENTIAL, this large-scale pilot aims at testing either national prototype solutions or a European reference implementation of the EU Digital Identity Wallet, depending on the level of maturity of the country. The CTIE also joined the POTENTIAL consortium as a beneficiary. The use cases that Luxembourg is contributing to are eGovernment services, bank account opening, mobile driving license and qualified eSignature.

## Cybersecurity

### Fourth National Cybersecurity Strategy

On 24 February 2021, the government approved the **fourth National Cybersecurity Strategy** for the period 2021–2025, building on the foundations of the previous strategies and illustrating the government's engagement to meet the security challenges related to the digital transformation. The strategy focuses on three key objectives, each containing a series of strategic priorities:

- Objective I: building confidence in the digital world and protecting human rights online;
- Objective II: strengthening the security and resilience of digital infrastructures in Luxembourg; and
- Objective III: developing a reliable, sustainable and secure digital economy.

### General Data Protection Regulation

In May 2018, the General Data Protection Regulation (GDPR) entered into force in the whole EU and therefore also in Luxembourg. The National Commission for Data Protection (CNPD), which celebrated its 20th anniversary on 1 December 2022, is the relevant independent supervisory authority in Luxembourg. Its mission is to guarantee the respect of the rights of data subjects and the obligations of data controllers/processors in the context of the GDPR and other



pieces of legislation related to the protection of individuals with regard to the processing of personal data. The CNPD also represents Luxembourg at the European level in the European Data Protection Board (EDPB). Besides other guidance and awareness-raising activities, the CNPD develops with partners awareness-raising courses on the GDPR and data protection for civil servants in public institutions, and for the private sector with a focus on small and medium-sized enterprises (SMEs) and start-ups. The CNPD also participates in the annual 'Data Privacy Day' conference, an annual event for people interested in data protection and privacy organised by the Restena Foundation and the University of Luxembourg in the framework of the International Data Protection Day. In the context of the 17th International Data Protection Day, the CNPD organised on 27 January 2023 a conference entitled 'The metaverse: what reality for privacy rights and freedoms?'



### Act on the Organisation of the National Commission for Data Protection and the General Data Protection Scheme

The Act on the Organisation of the National Commission for Data Protection and the General Data Protection Scheme of 1 August 2018 repealed the previous act on data protection (amended act of 2 August 2002) and implemented the GDPR at national level. The aim of the act is to establish the CNPD as the national supervisory authority for the GDPR, conferring on it the corresponding extended tasks and powers as provided for by the GDPR. Furthermore, it defines the legal framework for the specific provisions of Luxembourgish law, including those relating to the supervision of employees.



### Amended Act on Data Protection and Electronic Communications

The amended Act on Data Protection and Electronic Communications of 30 May 2005, concerning the specific provisions for the protection of the individual as to the processing of personal data in the electronic communications sector, and amending Articles 88(2) and 88(4) of the Code of Criminal Procedure, transposes the amended Directive 2002/58/EC and covers the processing of personal data in the sector of electronic communications. The act governs confidentiality in the field of telecommunications and electronic communications, taking into account recent and foreseeable developments in the field of services and technologies involving electronic communications. It aims to protect the privacy of internet users (including protection against unsolicited commercial communications or 'spam') and users of added value services, such as the Global Positioning System (GPS).



### Cybersecurity Competence Centre

In 2023, the National Cybersecurity Competence Centre NC3 was **launched** in the context of the European Cybersecurity Competence Centre (ECCC). In addition to the new mandates established by the applicable European Regulation, the NC3 continues promoting the national cybersecurity ecosystem by focusing on three areas of expertise, i.e. observation, training and testing. In the area of training, different modules are offered, including simulation tools for cyberattacks. Moreover, to contribute to job access for men and women, the Centre also offers workshops facilitating job reskilling as well as short-term certification possibilities based on local needs.



### Luxembourg House of Cybersecurity

The Luxembourg House of Cybersecurity (LHC) is the backbone of leading-edge cyberresilience in Luxembourg, and aims at capitalising on and further developing innovation, competencies, collaboration and capacity building. In 2023, Luxembourg launched, via its agency LHC.lu, a MISP service dedicated to law enforcement agencies.



## 6. Innovative Technologies

### Artificial Intelligence



#### Strategic Vision for Artificial Intelligence

The [Strategic Vision for Artificial Intelligence](#) includes political guidelines applying both to AI and the ongoing digitalisation of key economic sectors with the objective of supporting the emergence of a sustainable and reliable national economy. In this sense, the development of a strategic vision for AI represents a national priority for Luxembourg. In addition to implementing detailed actions and engaging citizens on their attitude towards AI, the document identifies three goals for the country:

- Becoming one of the most digitally advanced societies in the world, in particular within the EU;
- Establishing Luxembourg as a sustainable, data-driven economy; and
- Supporting the development of AI with a human-centred approach.

At State level, Luxembourg's Strategic Vision for Artificial Intelligence led to the creation of the [AI4Gov Inter-ministerial Committee](#). To promote the use of AI within the public administration, the AI4Gov Inter-ministerial Committee launches regular calls for experimentation projects in AI and data science, addressed to public actors (see below). In addition to providing technical assistance for projects and mutualising joint government needs, the Committee also offers legal and ethical support through an inter-ministerial working group called 'AI Legal & Ethics Working Group', established at the beginning of 2020. Through the support of AI4Gov projects and dialogue with project leaders, this working group carries out a preliminary assessment of the legal and ethical risks associated with the projects, thus laying the groundwork for the approach to AI governance in the sector.

On 20 November 2020, the government undertook an additional step in pursuing the Strategic Vision for Artificial Intelligence by launching a public consultation on the perception of AI among the population and societal actors. The results of the consultation were presented by Prime Minister Xavier Bettel in spring 2021.

Following the general elections in 2023, the new Luxembourg government considers updating the National AI Strategy a high priority.



#### National Call for Projects

The AI4Gov calls for projects align with the government's desire to continue to promote experimentation and adoption of new technologies such as AI and data science within public administration.

A first version of the call for projects was launched at an inter-ministerial coordination meeting as part of the Strategic Vision for Artificial Intelligence on 14 October 2019. The 2020 and 2021 calls resulted in the selection of the following experimentation projects (of which three are being implemented at the moment): (i) Extopia: extraction of topographic objects – Cadastre and Topography Administration; (ii) Facial recognition for the Media Library – SIP; (iii) AI for eLuxembourgensia – National Library of Luxembourg; (iv) Transkribus: transcriptions of handwritten documents – National Archives of Luxembourg; and (v) Statistics with mobile phone data – STATEC. The 2022 call resulted in the selection of the following projects: (i) ADEM Interact: conversational AI platform which can assist agents who receive messages from job seekers formulating personalised responses; (ii) ADEM Profiling: support model for agents to assess which job seekers need what measures as well as what levels of support are needed to access employment, based on the analysis of existing data at the Employment Development Agency (*Agence pour le développement de l'emploi*, ADEM); (iii) CNS Phonebot: Phonebot powered by AI applied to the use case of the Chatbot/Phonebot service supporting the agents of the National Health Fund (*Caisse Nationale de Santé*, CNS) in their work. The Luxembourgish language is not yet compatible with technologies to perform Text-to-Speech (TTS) or Speech-to-Text (STT) for Phonebots. As a result, the project aims to change this situation and offer optimal service to all policyholders.

Building on the success of previous calls for projects, the AI4Gov initiative is launching the fourth call for administrations wishing to experiment with AI and data science.



## Distributed Ledger Technologies



### Blockchain White Paper and Public Sector Blockchain

In June 2018, the Ministry of Economy, with the support of the Luxembourg Institute of Standardisation, Accreditation, Safety and Quality of Products and Services (*Institut luxembourgeois de la normalisation, de l'accréditation, de la sécurité et qualité des produits et services*, ILNAS), published a **White Paper on Technical Standardisation** related to blockchain technology.

In 2019, the Ministry for Digitalisation, together with the Inter-communal Union for Information Management (*Syndicat Intercommunal de Gestion Informatique*, SIGI) and the CTIE, announced the **creation of the first Public Sector Blockchain (PSBC)**. In 2020, the PSBC was set up at technical level by establishing the network with nodes at the CTIE, the SIGI and the Teleinformation Network of National Education and Research (*Réseau Téléinformatique de l'Education Nationale et de la Recherche*, Restena), as well as at governance level through the signing of a governance agreement between the Ministry for Digitalisation and the SIGI, and through the establishment of a Governance Committee between the above-mentioned partners and the technical working groups. In 2021, the online application for higher education State financial aid was end-to-end digitalised based on the PSBC. Students who apply for financial aid for higher education will receive the approval of a student loan by the Ministry of Higher Education and Research in the form of a certificate with a QR code. They can then use it to request their loan from their bank electronically in a fully secure and traceable way. The QR code allows the bank officer to verify that the supporting document is authentic and that the loan instalment is being requested from only one bank. Authenticity is verified through the PSBC, which is used to notarise the certificates issued.

In September 2023, the Ministry for Digitalisation signed a declaration on Luxembourg's participation as a founding member in a new European Digital Infrastructure Consortium (EDIC). The EUROPEUM-EDIC will be founded in 2024 and will strengthen the European Blockchain Partnership (EBP). It will continue the work done by Member States on the EBSI project, thereby also contributing to the EU strategy on decentralised technologies, aligning with the EU Digital Decade Programme. More in detail, the EUROPEUM-EDIC aims to establish a production infrastructure for cross-border services, supporting the development, deployment, operation and governance of the EBSI. It aspires to create a governance entity recognised by all EU Member States to foster the growth and scalability of the EBSI, promoting collaboration and innovation in decentralised technology. The Ministry for Digitalisation is actively involved in the development of the new consortium and in the transition work.

Finally, numerous associations and initiatives, partly supported also by the government, promote the research, teaching and development of blockchain technology in Luxembourg. In particular, in December 2019 five of the main players, INFRACHAIN, LëtZBlock, the Luxembourg House of Financial Technology (LHoFT), LIST and the SnT, launched a collaboration to strengthen Luxembourg as a European blockchain hub.



### Law on the Circulation of Securities

A new **Law on the Circulation of Securities** was published on 1 March 2019, amending the law of 1 August 2001. The purpose of this law is to create a legal framework enabling the circulation of securities by means of the new secure electronic registration technologies, in particular those based on the blockchain, with the aim of increasing legal certainty in this area.



### Law on the Issuance of Dematerialised Securities Using the Distributed Ledger Technology

The **Law of 22 January 2021 on the Issuance of Dematerialised Securities Using the Distributed Ledger Technology**, modifying the amended Law of 5 April 1993 on the Financial Sector and the Law of 6 April 2013 on Dematerialised Securities, introduces the possibility to use the distributed ledger technology (blockchain) for dematerialised securities. The law pursues the modernisation of Luxembourg securities laws along two directions:





- The introduction of a definition of what constitutes an issuance account in the Law on Dematerialised Securities. This is a novelty and will allow for a variety of technologies to be adopted; and
- The expansion in the scope of entities that may be considered as a central account keeper.



## Blockchain

**Infrachain a.s.b.l.** is a Luxembourg-based non-profit organisation, created by the emerging blockchain industry and supported by the Luxembourg government, aiming to implement blockchain technology solutions in a trusted manner in the current regulatory environment. Since December 2019, Infrachain has been leading a consortium of main actors from the technology ecosystem to set up a blockchain hub of excellence, in line with the strategic ambitions of *Digital Lëtzebuerg*. Their goal is to create a landmark EU hub in Luxembourg for blockchain research, education and industry projects, as well as to develop industry facilities and competences that will foster the deployment of the latest blockchain and distributed ledger technologies.

During the **Infrachain Summit** on 23 May 2019, Marc Hansen, the Minister Delegate for Digitalisation, announced a first public sector blockchain platform which will be operated by a range of public sector actors, including the CTIE and SIGI. The public sector blockchain will help to improve the transparency, reliability and security of the public sector's digital information and process systems. Another example in the field is the project that the CTIE implemented in 2019, namely a notary system based on blockchain to demonstrate the benefits of this technology.

## Big Data

No particular initiatives in this field have been reported to date.

## Cloud & edge computing



### GovCloud

The CTIE has been operating GovCloud since 2016. GovCloud is a sovereign cloud of the private type, i.e. restricted to customers of the public sector. It is managed under the Infrastructure as a Service (IaaS) principle, which means that the CTIE provides administrations with a centralised infrastructure which they can use according to their needs. Using a centralised cloud gives the government the following benefits:

- operational flexibility: each administration can use the GovCloud infrastructure according to its needs, i.e. it can increase or decrease autonomously and by self-service the computing capacity or storage used by its applications, and thus adapt them to its current needs; and
- innovation: the CTIE is constantly expanding its infrastructure offer to enable public administrations to have access to the latest technologies. In 2022, the CTIE expanded its Storage as a Service offer by making the S3 cloud data storage type available to its customers. This recent standard allows applications to back up objects that can include files, images, videos and data, and that can be easily accessed through a web interface or API. It features high scalability, high availability and robust security options. In 2023, the CTIE implemented a container orchestration platform on the GovCloud infrastructure. First used for new applications developed by the CTIE, the platform will be made available as a platform-as-service-solution to administration in 2024, allowing developers to use state-of-the-art development and deployment techniques/tools when implementing new back-office applications.

Noteworthy, considering that administrations do not operate their own infrastructures, a centralised cloud also fits perfectly into a policy of cost rationalisation and energy savings.

## Internet-of-Things

No particular initiatives in this field have been reported to date.

## Quantum Computing

### EuroHPC

In an effort to strengthen the digital competitiveness of Luxembourg and Europe, the government signed a European High-Performance Computing (HPC) declaration, also referred to as EuroHPC. EuroHPC provides for collaboration in setting up an EU-wide HPC network initiated by Luxembourg. In signing, Luxembourg, Italy, Spain, France, Germany, Portugal and the Netherlands reinforced the Europe 2020 Strategy by helping secure the computing capabilities needed for the EU's competitiveness as a digital economy. In this framework, Luxembourg is also part of the EuroHPC network of HPC Competence Centres.

On 25 June 2018, the European Commission decided to establish the EuroHPC joint headquarters in Luxembourg, with the aim to equip the EU with a pre-exascale and petascale infrastructure (1 015 calculation operations per second) by 2020, and develop the technologies and applications needed to reach the exascale level (1 018 calculation operations per second) by 2023.

In 2019, Luxembourg was also selected to host a supercomputer that will serve public and private users, and will be part of the EuroHPC network of supercomputers. Luxembourg's contribution to the EuroHPC initiative, namely the high-performance computer named MeluXina, was inaugurated in June 2021 and started being operational in November 2021. It was immediately ranked 1<sup>st</sup> in Europe in the Green500 list and 4<sup>th</sup> worldwide. This high-performance computer is currently taking shape in the data centre in Bissen. In addition, the University of Luxembourg is also home to a high-performance computer and a EUR 10 million budget has been allocated for a new, faster one.

Finally, Luxembourg is leading the consortium that was selected in September 2021 by international experts as winner of the EuroHPC Joint Undertaking (JU) call for projects to create and implement the first pan-European Master of Science (MSc) programme in HPC. The experts praised the high quality of the proposal, and expressed their trust in Luxembourg to be able to mobilise all the stakeholders and together deliver on this ambitious educational project. Eight graduating universities (FAU in Nürnberg, KTH in Stockholm, Polimi in Milan, UniSofia in Sofia, Sorbonne in Paris, Uni.lu in Luxembourg, UPC in Barcelona and USI in Lugano), and 60 public and private sector participants constitute the consortium led by Luxembourg. Funded by the EuroHPC JU, the MSc programme will link academic excellence to the current and future challenges of the European businesses, industry and public sector in the multidisciplinary field of HPC. The modular curriculum and partnership with the European HPC industry will provide students with distinct qualifications and outstanding career prospects in the rapidly expanding field of HPC. In September 2022, the first students of the newly created [European Master](#) in HPC started their two-year programme.

### National Supercomputer Centre LuxProvide

[LuxProvide](#) is the national HPC centre in charge of the planning, installation and operation of MeluXina. The mission of LuxProvide, headquartered in Bissen, is to facilitate access to the use of the computational capabilities of the national supercomputer MeluXina by setting up a competence centre in collaboration with Luxinnovation, the national innovation agency, and the University of Luxembourg, providing dedicated support to all kind of users in their HPC projects. MeluXina will support Luxembourg's Data-driven Innovation Strategy, contributing to building a digital, sustainable and reliable economy by making HPC accessible to businesses of all sizes ([IPCEI-CIS](#)). This specific IPCEI will create a cloud-edge continuum, and grant the right for applications and data to freely 'roam' from one cloud provider to another (see the data portability right granted by the GDPR), with a special focus on edge cloud computing. Luxembourg will contribute to the IPCEI with a special focus on open-source cybersecurity tools, like Security Operation Centres (SOCs), and the Computer Security Incident Response Team (CSIRT) tools for cloud and edge-cloud, generating huge positive externalities in terms of synergies. Luxembourg will also provide privacy and trade secrets preserving technologies for cloud that are also capable of running on edge nodes (for instance Industry 4.0 installations). Luxembourg has put a special focus on cross-company and cross-border collaboration and the capitalisation of synergies. To achieve this, all documentation, APIs, products and services will be published in open source via a resource centre becoming the first Luxembourg Open-Source Promotion Office (OSPO). An open cybersecurity data space will be created where the connected data lakes will be running on edge cloud to guarantee low latencies to large consumers and contributors. The data space as well as the resource centre providing access to documentation and open source software are





implemented as edge nodes connected to the high-performance computer MeluXina and the Data Exchange Platform.

Luxembourg is financing the IPCEI-CIS initiative with a national State aid funding amounting to maximum EUR 25 million for the next three years, of which EUR 2 million are allocated to the development of the edge node with the open cybersecurity data lake in close proximity to MeluXina to enable secure machine learning. The first projects were received in the fourth quarter of 2022 and the Luxembourg State Aid Commission is to decide upon the conformity of the projects with State aid rules.

## Gigabit and Wireless High-speed Networks



### Ultra-high Speed Broadband Strategy 2021–2025

In October 2021, Luxembourg's government put forward the **Ultra-high Speed Broadband Strategy 2021–2025**, following the government's broader objective of fostering a digital society that benefits all residents.

Building on the sound basis of a high-quality and scalable communication infrastructure developed over the past decade, the new strategy defines two main areas of intervention: (i) reduction of the digital divide in the Luxembourgish society; and (ii) contribution to dynamism and competitiveness within the telecommunication sector. The strategy operationalises these two areas of intervention by tackling existing gaps within the telecommunication network. In order to fill these gaps, the strategy sets five main objectives:

- Make connectivity accessible to all;
- Accelerate the transition of households and businesses to more efficient and sustainable technologies;
- Accelerate the deployment of future-proof infrastructure, while respecting technological neutrality;
- Improve transparency and strengthen consumer protection; and
- Develop Luxembourg as the launchpad of choice for ICT service providers of today and tomorrow.

The first objective was implemented in 2022 by introducing a voucher scheme, supporting households in a challenging financial situation by reducing the price for a fixed internet subscription by 10 EUR per month. For 2023, the priority was to implement objectives 2 and 3, i.e. promoting the take-up of future-proof ultra-high speed broadband connectivity solutions and eliminating white spots, targeting areas with no very high capacity network (VHCN) connectivity. To support the national Ultra-high Speed Broadband and 5G strategies, MyConnectivity was created in early December 2021 as a GIE. Its establishment is based on the strategic interest to accelerate and improve the connectivity of private households and businesses in the Grand Duchy of Luxembourg. This will help bringing digital public administration services closer to the citizens. This GIE was created jointly by the State, via the Media, Connectivity and Digital Policy Service (*Service des médias, de la connectivité et de la politique numérique*, SMC), and by the LU-CIX Management GIE, due to its close contact to players in the field of telecommunications and connectivity.



### 5G Strategy

In September 2018, the SMC of the Ministry of State launched the **5G Strategy for Luxembourg**. It pursues the following objectives:

- Assigning the necessary spectrum: freeing the necessary spectrum bands and assigning them in a suitable way to the interested mobile network operators;
- Supporting the technical roll-out: supporting the technical roll-out (e.g. access to public infrastructure) based on the existing regulatory framework;
- Answering citizens' concerns: ensuring transparent communication of the roll-out process and the scientific data about electromagnetic fields (EMFs);
- Pioneering a citizen-centric 5G network: organising a series of conferences and call for projects (see below), as well as challenging all stakeholders to utilise the potential of the 5G network by triggering pilot projects that bring added value to the society in the fields of eHealth, smart mobility and digital communities; and
- Developing an innovative mindset.

As a complement to the elaboration and publication of the national 5G Strategy, the SMC organised conferences as well as experience sharing sessions with regards to the 5G technology. The SMC also launched national call for projects to foster innovative projects in the field of new



generation electronic communications. The latest national call for projects, launched in 2023 by the Ministry of State, the SMC, the Ministry of Economy, the Fonds National de la Recherche (FNR) and Luxinnovation, aims to offer companies and research institutions a new funding opportunity supporting consortia to take advantage of 5G communication technologies. More information can be found at [www.5g.lu](http://www.5g.lu).

### Cross-border Corridors

One element of the EU 5G Strategy is the deployment of cross-border corridors along the major transportation routes. Luxembourgish stakeholders have been very involved in this regard, with both telecom operator and research centres but also other organisations implied in several of the European projects.

For instance, the **5G CroCo** (Cross-Border Control) was a European research project that provided a 5G coverage of the Luxembourg portion of the motorway section linking Metz (France), Merzig (Germany) and the Grand Duchy. The project consortium plans to further exploit it and enlarge its scope.

Furthermore, two other corridors are currently being worked on:

- The 5G DeLux project focuses on enabling seamless mobility at European borders as well as connected and automated mobility (CAM). Partners and consortium members are Telekom Deutschland, Post Luxembourg and the BMW Group. This project aims to develop and introduce a seamless handover solution for 4G and 5G, and to define a European standardised blueprint. The key motivation is to provide seamless cross-border mobility for customers of all participating mobile network operators;
- The 5G MELUSINA project aims to deliver an inception study to prepare the implementation of 5G infrastructure along a rail cross-border section of the North Sea-Mediterranean TEN-T Corridor between Metz (France) and Luxembourg City (Luxembourg), to the benefit of train passengers' connectivity and digitalisation of rail operations. The study will be carried out by a consortium involving both rail and mobile network operators from France and Luxembourg.

## GovTech

### GovTech Lab

The Ministry for Digitalisation and its technological arm, the CTIE, initiated the GovTech Lab in 2020. It is a joint initiative aiming to encourage and support a culture of innovation and change within the State to rethink existing procedures and operational flows, and integrate principles such as digital by default, design thinking or service by design when conceiving new solutions. The GovTech Lab combines GovTech and open innovation to accelerate the development and further improvement of digital public services.

To achieve its mission, the GovTech Lab launches calls for solutions. In this context, in 2022 it introduced SpeedUP, a faster way to launch calls for solutions. This type of call for solutions encompasses the search for new or existing technological solutions, legal analyses or even concept propositions. With a maximum of eight months from the launch of the call to the implementation of the solution, the SpeedUP procedure enables the Ministry to accelerate the identification of appropriate solutions as well as their integration. Since its introduction, five SpeedUPs have been launched: (i) a legal analysis for a digital mandate; (ii) a study on open web content, and its feasibility and impact in the public sector; (iii) a dynamic data visualisation solution; (iv) a solution to determine the flow velocity and cross-section of rivers using dynamic images; and (v) the development of a set of training courses for the 'Cloud Pak for Business Automation' suite.

In 2023, the GovTech Lab launched two new innovation partnerships. As part of the 'Transcribo vox' call for solutions, a solution for the automatic transcription in real time of video and audio streams in Luxembourgish, French, German and English was sought. The use case selected for this call for solutions focused on press conferences, which are currently transcribed manually by the government's Information and Press Service. The 'Semantifynd' call for solutions was launched with the aim of working with an external partner to introduce a new method of accessing information on government websites, using semantic search based on vectorised documents. This innovative approach aims to overcome the limitations of existing methods and provide an enhanced user experience, facilitating access to accurate and relevant information through an intuitive and powerful search interface.

Additionally, the GovTech Lab fosters a GovTech community by organising specialised events, enhancing the ecosystem of public and private entities developing and advocating for innovative



solutions. It invites government officials and private sector actors to present interesting use cases, projects, initiatives and technologies with the aim of fostering the exchange between different Ministries and administrations, as well as between the public and private sector.

The GovTech Lab also organises hackathons, ideathons, workshops and a series of recurring events. Different formats of recurring events have been developed for different types of audiences: GovTech Afterwork, Technobreakfast, eGov Exchange and GovTech Experiment. In 2023, the GovTech Lab hosted and organised a total of 25 activities with an average of 30 participants per activity. The subjects addressed in 2023 included HPC, the use of mass communication platforms, generative AI, smart cities and the Internet of Things (IoT), quantum computing, robotics and the public sector blockchain. A new type of event was also added to the GovTech Lab's events in 2023, i.e. the GovTech Lab Innovation Club. This format is dedicated to State agents of the Ministry for Digitalisation and the CTIE to facilitate a culture of innovation and stimulate the participation of agents in the search for new ideas. The GovTech Lab's activities are published on the [website](#), and shared on social networks and via a monthly newsletter.

### Infrachain Challenge 2022

In November 2022, the GovTech Lab published a [communication](#) about the Infrachain challenge to develop a team project. Their work will be reviewed by the Ministry for Digitalisation, which will possibly contact them for future collaboration to turn their concept into a public sector blockchain application.

### SpeedUp Hive Academy

The GovTech Lab [launched](#) its latest SpeedUP initiative, called 'Hive Academy'. It was open for applications from 13 November to 18 December 2023 and aims to develop an innovative training programme to enhance the skills of resources integrated into the CTIE on the IBM's Cloud Pak for Business Automation platform. Many administrations are in the process of implementing or considering the Hive solution, a comprehensive Electronic Document Management (EDM) and Case Management solution. To support administrations in their digital transformation, the CTIE plans to establish a 'Hive Academy' to train external collaborators, who can join the CTIE's Hive team and become proficient in handling projects for requesting administrations.

# 7. Digital Public Administration Governance



For more details on Luxembourg's responsible bodies for digital policy and interoperability, its main actors, as well as relevant digital initiatives, please visit the [NIFO collection](#) on Joinup.

## National

### Ministry for Digitalisation

Following the general elections on 14 October 2018, Luxembourg's new government created a **Ministry for Digitalisation** in charge of all the topics linked to digitalisation and responsible for guaranteeing even higher speed and quality. The Ministry for Digitalisation is a facilitator and coordinator for other Ministries and other partners wishing to develop their activities in the field of digitalisation and eGovernment. Offering more eGovernment services in collaboration with the CTIE is one of the top priorities of the newly created Ministry, to foster the modernisation of public administrations, and improve the daily life and administrative processes of citizens and businesses. Assisted by the [CTIE](#), the Ministry is also the main body responsible for interoperability activities in Luxembourg.

In this framework, the Ministry for Digitalisation has set the goal of successfully achieving digital government. The Ministry's **four strategic axes** contributing to this goal are the following: (i) developing eGovernment; (ii) advancing administrative reform; (iii) promoting digital inclusion; and (iv) ensuring data governance.

The specific competences of the Ministry for Digitalisation were defined by the [Grand Ducal Decree on the Establishment of Ministries](#) on 5 December 2018 and can be summarised as follows:

- Implementation of the Digital Luxembourg Strategy and monitoring of the ICT sector (shared competence with the Minister of Economy, and the Minister for Communications and Media);
- Promotion of the ICT sector (shared competence with the Minister of Economy);
- Digitalisation of administrative procedures and digital transformation of the public administration;
- Follow-up on the work of the High Committee for Digital Transformation;
- Development and implementation of a plan on the IoT;
- Development of the digital infrastructure (in consultation with the Minister for Communications and Media);
- Development of a national strategy in the field of AI (in consultation with the Minister for Communications and Media, and the Minister of Economy);
- Implementation of the national 5G Strategy and development of pilot projects (in consultation with the Minister for Communications and Media);
- Assurance of a policy of digital inclusion;
- Promotion and organisation of State administrations' automation, in particular as regards the collection, transmission and processing of data;
- Search for synergies between the different Ministries and optimisation of their exchange of information;
- Assistance to the various administrations of the State in the execution of the routine IT work, and the management of fixed and mobile communication systems; and
- State electronic filing.

In February 2020, the Ministry for Digitalisation set up an Inter-ministerial Committee for Digitalisation in Public Administration. The Committee is chaired by the Ministry for Digitalisation and the CTIE, and includes members responsible for the digital transformation in other Ministries. It meets on a regular basis to take stock of Luxembourg's digital projects and to set a coordinated agenda of initiatives aiming to reinforce eGovernment in Luxembourg.

Due to the restrictions linked to the Covid pandemic, the second central component of the digital governance structure, the High Committee for Digital Transformation, was only established in September 2022. It brings together the various Ministries, representatives of civil society and experts from several backgrounds. By its composition, the High Committee is dedicated to considering the challenges of digitalisation from various perspectives affecting the economy, work, education, health, continuing education or digital public services. Its members meet twice a year



to propose, analyse and discuss potential initiatives and projects to advance digital government, while considering the digital inclusion of all citizens.

### Government IT Centre

The **Government IT Centre** (*Centre des technologies de l'information de l'État*, CTIE) was established in 2009. It constitutes an active part of the Ministry for Digitalisation and is the main administration of the government in the fields of eGovernment, IT and modernisation of the State through ICT.

More specifically, the CTIE provides service coordination and planning to government bodies, and assists those bodies in the reorganisation and optimisation of their tasks. To this end, the Centre coordinates the following activities:

- Organisation of the automation of government departments regarding the collection, transmission and processing of data;
- Development and maintenance of administrative processes' mapping and their interoperability status;
- Provision of organisational support to State administrations and assistance in their reorganisation efforts; and
- Identification of synergies between the various State administrations and optimisation of the information exchange among them.

The CTIE is also responsible for implementing the provisions that originate directly from the government programme and the eGovernment Strategy. In addition, it is the administrative body responsible for IT services for Luxembourg's government, Ministries and public administrations. It offers a wide range of services to its clients, namely more than 14 000 end users in the public administration. These services cover all areas of IT, including network and communication infrastructure, hosting, private cloud (IaaS), platforms (PaaS), generic and customised software solutions (SaaS), as well as related services such as secure document generation, individualised mass printing, etc. The CTIE also manages office automation and telephony for Ministries and administrations, and is responsible for implementing and enforcing the State's IT infrastructure security policies.

Furthermore, the CTIE is responsible for specific tasks, such as the management of the Guichet.lu Portal, the SPOC for citizens and businesses for carrying out public procedures. The portal's interactive MyGuichet.lu platform offers modern and easy-to-use digital services and is a key element of Luxembourg's digital strategy. In addition to a support centre (helpdesk) for the internal and external users of the systems operated by the CTIE, the CTIE also runs the Guichet.lu Helpdesk, whose primary goal is to help citizens and enterprises carry out their administrative procedures.

The responsibilities for different aspects (legal, operational, semantic or technical) of the main base registries in Luxembourg are partially decentralised to the registry itself and partially centralised to a central organisation. Most of the responsibilities are managed in a decentralised way by each authority in charge of the corresponding registry, and include the operational and legal ownership of the registry, the operational aspects, such as service levels and access formalities, and the decision on semantic levels. Such authorities are, for example, the National Society for Technical Control (SNCT), the Ministry of Justice, the Ministry of Finance, and the Cadastre and Topography Administration of the State of Luxembourg. In this field, the CTIE enables the digital exchange of information across the public sector. Its responsibilities are, aside from maintaining one specific registry (the RNPP), to provide general support for interoperability between administrations and to devise a broader strategy that drives the evolution of base registries.

### Department of Media, Connectivity and Digital Policy

The Department of Media, Connectivity and Digital Policy (SMC) of the **Ministry of State** is responsible for the coordination and development of the national communication infrastructure (national and international connectivity, wired and wireless networks, and data centres) as well as digital policy. The Department is also responsible for:

- The governance and implementation of the national 5G Strategy;
- The governance and implementation of the Strategic Vision for Artificial Intelligence in collaboration with Ministry for Digitalisation, the Ministry of Economy and the Ministry of Higher Education and Research;
- The governance and implementation of the Ultra-high Speed Broadband Strategy; and
- The governance and modernisation of the national communication infrastructure for public safety agencies.



## Ministry of Economy

The **Ministry of Economy** is responsible for creating a business environment that fosters innovation in the IT sector by granting public aid to start-ups, implementing a seed funding and venture capital framework, and simplifying and improving the relationship between IT innovators and the public sector.

Via Luxinnovation, the national innovation agency under the supervision of the Ministry of Economy, Luxembourg is supporting digital transformation projects, especially those following the Data-Driven Innovation Strategy of Luxembourg, which focuses on the use of new IT technologies and collaborative creation of added value. This includes cloud, big data, HPC and AI. The agency has updated its strategy to focus its efforts on two major axes: digital and sustainable development. Regarding the digital axis, the agency has set up a new Digital Transformation Department responsible for all digital transformation matters and encompassing the Digital Innovation Hub (DIH), the HPC Competence Centre (HPCCC) and the Gaia-X national hub. This department supports companies in their digital transformation according to their own degree of maturity and their own vision. From conceptual approach to project execution, the Digital Transformation Department supports companies in giving life to their project and work closely with the Research, Development and Innovation (R&D&I) Support Department, where experts translate these ideas and needs into R&D&I projects eligible for the various national and European aid programmes. In 2021, the DIH, focusing on the industry, interacted with over 100 companies with regard to their digital transformation.

Luxembourg also has a State aid scheme based on the General Block Exemption Regulation (GBER) which aims to incentivise companies to undertake innovation and research projects. These go from a simple digitalisation of internal processes, in particular for SMEs, to research projects aimed at developing new processes or products based on business and artificial intelligence. In addition, strategic public-private partnerships (PPPs) are organised to foster cooperation between national research organisations and companies (e.g. PPP Health Tech).

## Ministry of Finance

The **Ministry of Finance** is responsible for supporting the development of innovative IT tools for the financial sector, such as electronic and/or mobile payment solutions, virtual currencies, and financial data analytics tools and services.

## Ministry of Higher Education and Research

The **Ministry of Higher Education and Research** is in charge of promoting eSkills, IT training, and research and development (R&D) programmes in IT.

## Ministry of the Civil Service

The **Ministry of the Civil Service** is responsible for promoting and assuring:

- An attractive and exemplary public service enabled by performance-oriented, dynamic and highly motivated public officials; and
- A quality public service based on a simple, innovative and effective regulatory framework, which favours social cohesion and the economic prosperity of Luxembourg.

## National Commission for Data Protection

The **National Commission for Data Protection (CNPD)**, created in December 2002, is an independent agency whose task is to control the processing of personal data in Luxembourg and to ensure compliance with data protection regulations.

## Subnational (Federal, Regional and Local)

### Association of Luxembourg's Cities and Communes

The **Association of Luxembourg's Cities and Municipalities (Syvicol)** is the political representative body of Luxembourg's municipalities. It is the government's interlocutor for issues of general municipal interest. Syvicol promotes cities' interests, and advises on legislative and regulatory projects that have an impact at the local level, including matters concerning future eGovernment strategies and laws at a local/municipal level.





### Inter-Communal IT Management Association

The Inter-Communal IT Management Association (*Syndicat Intercommunal de Gestion Informatique*, SIGI) is a service provider set up by Luxembourg's municipalities to coordinate the development of common systems, and to promote the exchange and reuse of solutions and good practices. 101 out of the 102 local authorities in Luxembourg are members of SIGI and benefit from its IT services related to citizenship (population records, births, deaths and marriages, electoral registers, tax cards, etc.), invoicing and administrative accounting.

The SIGI project management office's role is to take charge of the new demands of different actors and to formalise them in a portfolio of projects before proceeding with their planning and execution. The application of methodological standards, in a structured framework and with experienced staff, guarantees the implementation of quality solutions.

Support is a key element of the service offered by SIGI, which includes incident management and change management. It is often the first point of contact of municipalities with SIGI, either to solve a problem or simply to receive advice.

### National Commission for Data Protection

The National Commission for Data Protection (CNPD) is an independent authority established by the Law on the Protection of Persons with Regard to the Processing of Personal Data of 2 August 2002.

## 8. Cross border Digital Public Administration Services for Citizens and Businesses



Further to the information on national digital public services provided in the previous chapters, this final chapter presents an overview of the basic cross-border public services provided to citizens and businesses in other European countries. [Your Europe](#) is taken as reference, as it is the EU one-stop shop which aims to simplify the life of both citizens and businesses by avoiding unnecessary inconvenience and red tape in regard to 'life and travel', as well as 'doing business' abroad. In order to do so, Your Europe offers information on basic rights under EU law, but also on how these rights are implemented in each individual country (where information has been provided by the national authorities). Free email or telephone contact with EU assistance services, to get more personalised or detailed help and advice is also available.

Please note that, in most cases, the EU rights described in Your Europe apply to all EU member countries plus Iceland, Liechtenstein and Norway, and sometimes to Switzerland. Information on Your Europe is provided by the relevant departments of the European Commission and complemented by content provided by the authorities of every country it covers. As the website consists of two sections - one for citizens and one for businesses, both managed by DG Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) - below the main groups of services for each section are listed.

### Life and Travel

For citizens, the following groups of services can be found on the website:

- [Travel](#) (e.g. Documents needed for travelling in Europe);
- [Work and retirement](#) (e.g. Unemployment and Benefits);
- [Vehicles](#) (e.g. Registration);
- [Residence formalities](#) (e.g. Elections abroad);
- [Education and youth](#) (e.g. Researchers);
- [Health](#) (e.g. Medical Treatment abroad);
- [Family](#) (e.g. Couples);
- [Consumers](#) (e.g. Shopping).

### Doing Business

Regarding businesses, the groups of services on the website concern:

- [Running a business](#) (e.g. Developing a business);
- [Taxation](#) (e.g. Business tax);
- [Selling in the EU](#) (e.g. Public contracts);
- [Human Resources](#) (e.g. Employment contracts);
- [Product requirements](#) (e.g. Standards);
- [Financing and Funding](#) (e.g. Accounting);
- [Dealing with Customers](#) (e.g. Data protection).

## The Digital Public Administration Factsheets

The factsheets present an overview of the state and progress of Digital Public Administration and Interoperability within European countries.

The factsheets are published on the Joinup platform, which is a joint initiative by the Directorate General for Digital Services (DG DIGIT) and the Directorate General for Communications Networks, Content & Technology (DG CONNECT). This factsheet received valuable contribution from the Ministry of Digitalisation (Ministère de la Digitalisation).



*The Digital Public Administration Factsheets are prepared for the European Commission by Wavestone.*

## An action supported by Interoperable Europe

The ISA<sup>2</sup> Programme has evolved into **Interoperable Europe** - the initiative of the European Commission for a reinforced interoperability policy.

The work of the European Commission and its partners in public administrations across Europe to enhance interoperability continues at full speed despite the end of the ISA<sup>2</sup> programme. Indeed, enhanced interoperability will be necessary to unlock the potential of data use and reuse for improved public services, to enable cross-border collaboration, and to support the sector-specific policy goals set by the Commission for the future.

Interoperable Europe will lead the process of achieving these goals and creating a reinforced interoperability policy that will work for everyone. The initiative is supported by the *Digital Europe Programme*.

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