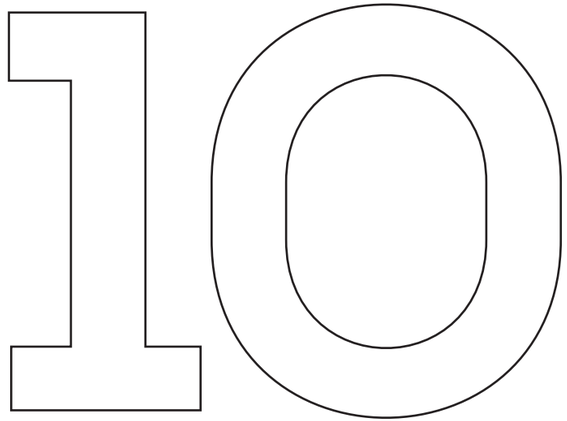
let's connect!

you know where to find us.

innovative-initiatives.public.lu



years
powering positive
digitalization.

innovative initiatives
digital luxembourg.

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foreword

10 years of innovating together

A happy birthday is in order to celebrate almost 10 years since the launch of Digital Luxembourg, the catalyst for Innovative Initiatives.

As we look back on nearly a decade in action, much has changed. What hasn't changed is our commitment to positive transformation through the responsible leveraging of technology. Our priorities remain the same too: digital skills, data policy, connectivity & new technology—the pillars of Luxembourg's information society.

As part of the Department of Media, Connectivity & Digital Policy, Innovative Initiatives' remit has always centered on the world's greatest power: INFORMATION—how it is accessed, collected, protected, shared & applied.

Moving into a new year under a new name, we remain focused on shaping a landscape in which our information society serves everyone, of all backgrounds. We've kept our sights set on the nationwide goals that spurred our creation in the first place: a diversified economy & widespread socioeconomic opportunity.

That's why Innovative Initiatives continues to prioritize digital skills programs where they are needed the most: for children, students, adults looking to upskill or pivot, & ICT professionals wanting to specialize.

At the same time, our team in Brussels helps shape digital policies that serve people first while also fostering innovation. The consequences of their efforts grow in importance as AI & other new technologies become mainstream.

In the world of connectivity & technology, we've taken our 5G infrastructure to the next level by facilitating 5G pilot projects that offer new solutions for Luxembourg.

While we are more accustomed to looking forward than backward, this progress report presents an opportunity to reiterate our role & reflect on concrete outcomes from the past few years.

There is plenty to celebrate & new innovative initiatives are always just around the corner.

Thank you for being a part of the journey.

Anne-Catherine Ries
Head of the Department of Media, Connectivity & Digital Policy

innovative initiatives: new name, renewed focus

Since Innovative Initiatives launched as Digital Luxembourg in 2014, the country's innovation landscape has catapulted skyward. Its startup ecosystem has matured, new R&D & open innovation have introduced breakthrough services to the market & public-private partnerships have brought novel solutions to society.

Over the last 10 years, through our partnerships with entrepreneurs, initiatives & other ministries, we have seen firsthand the pioneering minds at work in Luxembourg. Supporting & collaborating with these innovators has been an adventure & an inspiration.

from digital luxembourg...

The 'Digital Luxembourg' brand has served us well for a decade. It came at a moment when businesses & governments were eagerly exploring the new potentials of digitalization, with catchy terms like fintech & regtech frequenting the media.

During that time, we identified gaps & went wherever we were needed—kickstarting & supporting initiatives that contributed to the startup & innovation ecosystem. While we're no longer playing catch-up, critical work continues as we shape frameworks that prioritize people & foster innovation.

Once a newcomer ready to disrupt, digitalization is now the foundation of our modern world, superimposed onto every aspect of life.

Once a newcomer ready to disrupt, digitalization is now the foundation of our modern world

...to innovative initiatives

To reflect the next era of digitalization, we choose this moment to give Digital Luxembourg a new name: Innovative Initiatives.

'Innovative Initiatives' communicates our renewed focus on shaping a responsible information society—the core role of the Ministry of State's Department of Media, Connectivity & Digital Policy, in which we are embedded.

Our specialty is the intersection of society & information in all its forms, from traditional media to big data. Due to our specific expertise, we operate in four priority areas: Digital Skills, Data Policy, Connectivity & New Technology.

Our work continues in those areas as we enable new projects, support existing initiatives & keep the public informed. As the pace of innovation accelerates, we need a name that remains relevant at every step.

'Innovative Initiatives' lets us continue our important work, wherever the road leads next.

our priority areas: pillars of the information society

digital skills

Digital Skills has been a focus area for Innovative Initiatives from the start. It was identified early on as both a European & national priority, & Luxembourg continues to perform well in the context of Digital Decade targets: 64% of the population possesses at least some basic digital skills; 7.7% of the workforce consists of ICT specialists (compared to a 4.6% EU average); & its share of women ICT specialists lies above the EU average (Digital Decade Country Report 2023: Luxembourg).

As a facilitator of Luxembourg's responsible information society, the Department of Media, Connectivity & Digital Policy, via Innovative Initiatives, collaborates with government bodies (e.g. the national employment agency—ADEM), private companies (e.g. Google) & nonprofits (e.g. Luxembourg Tech School) to multiply learning opportunities for all audiences. We then draw on our network & online platform to keep the public aware of those opportunities. Digital skills are central to the nation's strategic goal of a diversified economy & modern workforce. Economic wellbeing & inclusion are inextricably linked. We want the information society to work for everyone, regardless of age, skill level, socioeconomic status & background. Without a skilled population, we just have information, not an information society. Innovative Initiatives works to ensure that the country's digital skills programs reflect the full spectrum of needs, whether upskilling to open new career options, acquiring basic knowledge or earning advanced certifications.

Without a skilled population, we just have information, not an information society.

spotlight | digitalskills.lu

committed to digital inclusion

The Digital Skills & Jobs Coalition (DSJC) is Luxembourg's rendition of an EU-wide effort to reach Europe's Digital Decade objectives. These national coalitions aim to increase the number of Europeans with basic digital skills to 80 percent by 2030. Importantly, the DSJC addresses diverse national priorities with neutrality & a big-picture lens. Innovative Initiatives was an early supporter of the coalition due to a shared dedication to digital inclusion & skill building. Together with the Chamber of Commerce & the Chamber of Skilled Crafts, Innovative Initiatives co-finances the DSJC Coordinator position charged with managing & optimizing the coalition's operations. As a member of the governing board, we also assist with events, drawing on our network & knowledge. The DSJC's new platform—DigitalSkills.lu—consolidates & promotes skill-building opportunities across the country. This includes trainings (e.g. Wordpress, Photoshop & Data Management), events & resources. Luxembourg's DSJC was highlighted in the Commission's State of the Digital Decade report as a best practice.

digital skills opportunities

Here are some of the many learning opportunities transforming Luxembourg's skillset. Our contributions to each initiative vary based on need. Whether our role is small—instigating a conversation or introducing an idea—or central—spearheading teams or providing funds—Innovative Initiatives helps ensure opportunities for everyone.

education & youth

__ base1 makerspace
Facility in Luxembourg's Forum Geesseknäppchen that equips youth with new technologies, robotics equipment & coding skills to express their creativity through 3D design & printing, music composition, video production & more

__ cisco networking academy
Cisco Certified Network Associate Routing & Switching certifications, ICND1 & ICND2; program also introduces the field to high school students

__ code club
Nonprofit, volunteer-run organization that sparks children's interest in digital creation & coding

__ coding kit
Toolkit allowing Makerspace initiation activities—in the fields of programming, wearables & electronics—to be conducted in the local youth center

__ coding4kids
Programming by the National Youth Service in the form of weekly open-access coding classes developed using lessons learned from an initial FNR project

__ einfach digital
Modernization of school curricula to equip students & teachers with the digital & soft skills of the future

__ gender4stem
Online learning platform, training & products that help teachers recognize & tackle gender stereotypes in the fields of STEM

__ girls in ict day
Initiative that encourages young girls to pursue studies & careers in ICT

__ kids life skills
Fun introductory & weekly workshops geared toward teaching kids, ages 4-13, the tech skills they will need for the future

__ kniwwelino
Visual programming language & library of tested activities designed for primary school children to learn how to program

__ luxembourg tech school
Program teaching digital & entrepreneurial skills to young people via distinct modules that evolve with the market

__ the migrants' chronicle
Educational game that teaches the history of Luxembourg emigration & sparks empathy for migrants of yesterday & today; example of serious gaming

__ workshop4me
1.5-hour coding sessions for children to first learn basic concepts & then develop their own projects using drag & drop programming (Scratch or Python)

business & labor force

__ ai academy luxembourg
3 training modules respectively geared toward decision makers, technical professionals, data scientists & engineers

__ digital skills matchmaking
Ongoing event that unites IMS Luxembourg companies active in CSR with owners of socially minded digital projects to drive new partnerships

__ rails girls
Supportive coding workshops for women & girls organized by WIDE

__ women in digital empowerment (WIDE)
Nonprofit working to ensure that women seize opportunities in the digital economy via coding workshops, leadership programs & events

general public

__ elements of ai
Online program that demystifies AI, delivering complex subject matter in a digestible format for those with nontechnical backgrounds; available in all official EU languages

__ eu code week
Pan-European initiative supported by the European Commission to encourage all citizens to learn coding

__ info flow savvy
Trainings & events designed to help individuals navigate the exponential growth of digital information; resulted in the 6-part Infobesity Course

data policy

As technologies rise & evolve at exponential rates, our Brussels & Luxembourg-based policy teams work to shape policies that protect people & innovation, in that order. Dealing with a variety of digital topics from data markets to artificial intelligence to data protection, they use their digital policy expertise to enable frameworks for new business models & applications that guard human-centric principles & societal interests. Luxembourg's increasingly dynamic startup ecosystem & thriving corporate community are the result of national policies friendly toward innovation, especially innovation designed to serve the public. Our legal experts work alongside their European counterparts to ensure Luxembourg remains at the forefront of Europe's digital evolution.

spotlight | DAB+
regulating the future of radio

With no FM frequencies to spare in Luxembourg, plans for DAB+, the updated edition of Digital Audio Broadcasting, come just in time. Thanks to EU legislation, DAB+, the industry standard for digital transmission of radio programs will soon be featured in all vehicles. DAB+ promises (1) media pluralism by transmitting several radio programs on a single frequency thereby introducing more channels, (2) identical national coverage & (3) fair opportunities for new stations to establish themselves. After conducting a 2020 study on the logistical & technical demands of DAB+, Innovative Initiatives is spearheading its deployment by drafting a legal framework & roadmap. The Grand Duchy's draft regulation proposes using a public call for applicants to select an operator that will manage & broadcast the multiplex composed of up to 12 radio programs. The Department of Media, Connectivity & Digital Policy's tasks include overseeing the subsequent calls for applicants in order to determine which radio programs will be granted permissions on the DAB+ multiplex.

regulatory rundown

connectivity

dec 2020
European Electronic Communications Code
Modernizes regulatory framework to support Europe's connectivity needs & 2030 gigabit goals, for example by ensuring competitive markets, clearer contracts & higher service standards.

july 2021
Roaming Regulation
Extends 'roam like at home' scheme until 2032, allowing users to continue using mobile data while travelling across the EU at no extra cost.

feb 2023
Gigabit Infrastructure Act Proposal
Proposes regulation that would make EU-wide gigabit network rollout faster & more cost effective; part of a larger action plan.

media

Audiovisual & Media Services Directive
Coordinates EU-wide audiovisual media rules & protects vulnerable viewers, among other goals, in response to the video-sharing age.

2020 — sept

European Media Freedom Act Proposal
Protects media freedom & pluralism throughout the EU, safeguarding independence & preventing political interference, for example.

2022 — sept

data

AI Act Proposal
Proposes requirements for specific AI use cases to address unprecedented risks, while also supporting innovation; part of a larger AI package.

2021 — apr

The Data Act
Defines who can use & access data generated in the EU, increasing accessibility to benefit consumers & businesses alike.

2022 — feb

Data Governance Act
Offers a regulatory framework aimed to boost EU-wide data sharing in order to drive new innovations, jobs & societal solutions; applicable as of September 2023.

2023 — sept

e-government

eIDAS Regulation Revisions
Revises rules surrounding the cross-border use of electronic IDs & trust services, making it easier for EU citizens to access public services. The original eIDAS regulation has been in force since 2018.

2020 — july

Interoperable Europe Act Proposal
Supports public sector interoperability & collaboration across the EU, accelerating digital transformation for the benefit of society.

2022 — nov

eu strategy

Connecting Europe Facility – Digital
Supports investment in the EU's high-performance connectivity, particularly gigabit & 5G, in order to achieve its Digital Decade ambitions.

2021 — july

Digital Europe Programme
Allocates €7.5 billion to bridge the gap between research & market deployment, specifically in the areas of AI, supercomputing, cybersecurity, advanced digital skills & the widespread usage of digital technologies.

2021 — apr

Digital Decade Policy Programme 2030
Establishes an ongoing annual cooperation mechanism to monitor Member States' progress toward the EU digital targets, including via assessment reports, the first of which has been published.

2022 — dec

connectivity

Today's information exists as digital data, which only has value if it can be accessed. This is where high-performance connectivity comes into play, paving the way for cloud computing, the Internet of Things, automated driving & more. Back in 2010, the Department of Media, Connectivity & Digital Policy established Luxembourg's national strategy for ultra-high-speed networks, which led to the successful deployment of a scalable, next-generation telecommunications framework rooted in fiber optics. The team later developed Luxembourg's Ultra-High-Speed Broadband Strategy 2021-25 as applications based on machine-to-machine communication multiplied, relying on telecommunications & massive swathes of data. From 2020 to 2022, Luxembourg saw an increase in "very high capacity network coverage" from 91.7% to 93.3%, & at 93%, its overall 5G coverage remains well above the EU average of 81% (Digital Decade Country Report 2023: Luxembourg). Innovative Initiatives aided the development of the 5G Strategy for Luxembourg & has since gone further by supporting innovative 5G pilot projects that convey the technology's societal benefits.

spotlight | 5g call for projects

5G that serves society

After defining Luxembourg's 5G Strategy, the Department of Media, Connectivity & Digital Policy launched two 5G calls for projects in 2019 & 2021. The first centered around technologies with specific characteristics of next-generation electronic communications, such as ultra-reliable, low-latency, ultra-high-speed connections & uniform quality. The second focused on projects shedding light on the science behind 5G. The two calls for projects resulted in the co-funding of 11 pilot projects. The initiative concluded with a "5G Get Together," a showcasing & networking event where the Prime Minister joined the project teams in celebrating their accomplishments. Throughout this project, Innovative Initiatives helped illustrate the benefits of these pilot projects for our society, for example, through the 5G & Me video series.

5g & me pilot projects

To inform the public about the tangible potential impacts of 5G, we developed a video series that highlights the pilot projects.

View videos here

01 **IoT Healthcare Platform:** Integrative medical platform at Hôpitaux Robert Schuman that allows for medical data to be exchanged securely, reliably & in real time between all actors involved in a patient's health journey.

02 **Lux5GCloud:** Proposal of a smart cloud platform that allows dedicated users—from farmers to scientists to policy makers—to collect & share relevant data, while also enabling several applications. The project's selected use case is soil moisture monitoring, a key parameter for crop surveillance.

03 **IRANATA:** Investigation into active antenna systems (AAS), a key 5G technology that transmits dedicated signals through beams directed solely at the mobile user. The main purpose of the project is to ensure that radiation levels from 5G AAS remain at acceptable levels while optimizing network coverage.

04 **Waldbillig gëtt Digital:** Three smart community use cases in the Municipality of Waldbillig: (1) the provision of ultra-high-speed internet connectivity via 5G fixed wireless access within households of municipalities wishing to participate in the pilot project; (2) the retrofitting of over 100 household analog water meters, turning them into smart water meters; & (3) interactive totems that foster the digital communication of public information to citizens.

05 **LiLa 5G:** Centre Hospitalier Emile Mayrisch's 5G living lab includes two use cases: (1) the reliable & fast access of medical data by caregivers through an integrated network & (2) improved communication between caregivers & patients.

06 **Micro5G:** The study of mobile edge computing for 5G drone systems, which—along with ultra-reliable, low-latency communications & non-terrestrial networks—extends drone battery life & flight time. This combination of technologies could help improve disaster management.

07 **Smart Water Eislek:** Project aiming to optimize drinking water management by providing predictions based on real-time water network data in the Useldange test area. It draws data from smart meters installed in households & industrial sensors installed in areas with higher water consumption rates.

08

5G-EMIT: 5G Emission Monitoring Platform project aiming to propose & validate a data-driven network planning solution in order to recommend optimal network deployment strategies that consider radiofrequency EMF limits & various features provided by new 5G technologies.

09

5G-Planet: An awareness-raising platform that explains 5G technologies & the opportunities they offer in the automotive sector. The project's promotional efforts showcase how 5G networks can be used to deploy smart transportation systems that rely on network connectivity between vehicles.

10

5G & Microwaves: Qualitative information about electromagnetic waves that helps demystify the topic & bridge the gap between specialists & the general population. As part of the project, the Luxembourg Science Center showcases a range of scientific tools to visualize the basics of wireless communication.

11

SAFER: Demonstration of safe electromagnetic radiation emitted by 5g active antenna systems. Through two dedicated workshops, the project illustrates how 5G base stations emit a smaller amount of electromagnetic radiation into the environment than 4G base stations.

new technology

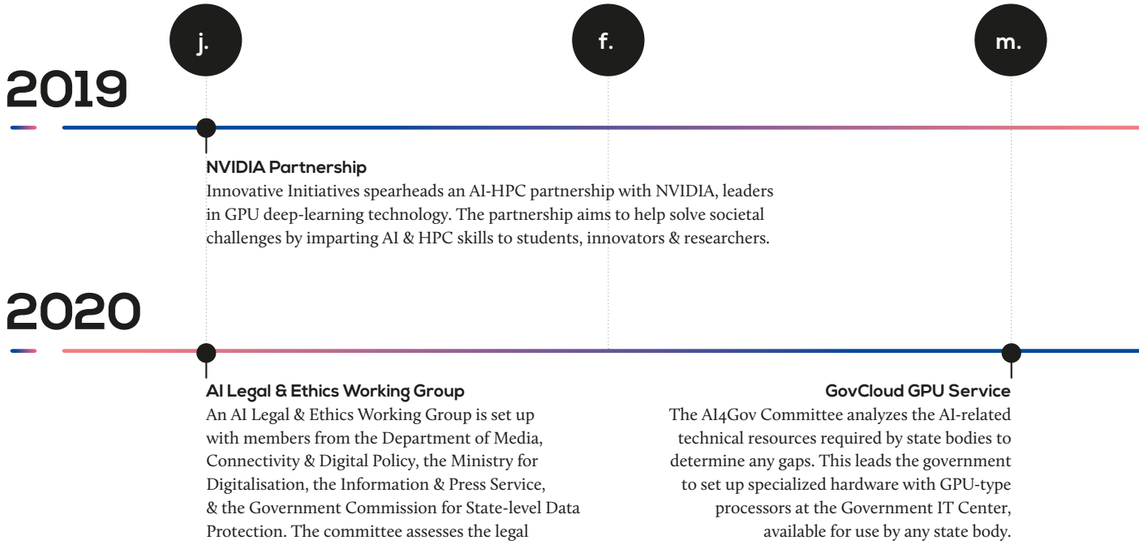
We facilitate the advancement of targeted technologies that underpin the information society. Perhaps no technology promises to reinvent access to knowledge like artificial intelligence. For years, Innovative Initiatives has guided the government's journey into AI, including through a strategic vision for Luxembourg, new advanced digital skills opportunities & policy (e.g. work on the AI Act). We also played a role in driving blockchain, for example through our support of Infrachain & the Luxembourg Blockchain Lab, recognizing the broad potential of distributed ledger technology. Our approach to new technologies is as multidisciplinary as our team & comes from all angles, ensuring that technology, guided by future-proof policies, always serves citizens & European values.

spotlight | AI strategic vision

setting a human-centric trajectory

As AI enters our daily lives more & more, Innovative Initiatives works to steer it in a direction that benefits the common good. It drafted an AI Strategic Vision for Luxembourg that reiterates the nation's ambitions to be a digital front-runner, one of the most advanced digital societies in the world & a supporter of human-centric AI development. Thanks to its multidisciplinary team, this vision takes into account accompanying regulation & skills. This process encompassed a 2020 public consortium (AI4Gov), a public survey & the launch of an AI Ethics Committee. To remain at the forefront of AI, Luxembourg will collaborate across borders, boost strategic investments, offer skills training & optimize its data market.

timeline of AI in luxembourg



priorities

2019

a.

AI Act Proposal
Luxembourg participates in the negotiations at the Council of the EU. The AI Act is only one of several legal instruments currently under negotiation that will influence the fate of AI development.

m.

AI Strategic Vision
Based on interministerial consultations, Luxembourg's strategic vision for AI details the country's national & international AI ambitions & activities. Drafted by Innovative Initiatives & Luxinnovation, the policy vision confirms Luxembourg's intention to take a human-centric approach to developing & regulating AI.

AI Questionnaire Results
20,000 randomly selected residents of Luxembourg reply to the government's AI questionnaire, part of its AI public consultation. The findings shed light on public views of AI. Overall, applicants (1) believe the state needs an AI ethics committee, (2) have a high or very high level of trust in the public sector to manage data & AI, (3) believe that AI has a place in everyday life, (4) use digital tools to interact with the government, & (5) support AI living labs.

j.

AI Academy
Innovative Initiatives, Microsoft, Devoteam Luxembourg & the National Institute for Public Administration partner together to launch Luxembourg's AI Academy. It offers three training modules: one to help decision makers master AI & make optimal strategic decisions, & two others geared toward individuals with technical profiles.

o.

AI4Gov Committee
Luxembourg's strategic vision for AI leads to the creation of an AI4Gov Committee with members from the Department of Media, Connectivity & Digital Policy, the Ministry for Digitalisation, & the Information & Press Service. The Committee encourages ministries & departments to adopt AI & other new technologies in order to improve services, solve issues & drive innovation.

2020

n.

AI4Gov Call for Projects
The AI4Gov Committee launches its first call for projects inviting the public sector to present experimental projects in the fields of AI & data science. An expert panel selects six winners, chosen from a total of 14 applicants, to receive technical support. Four of the six projects are implemented in 2020.

AI Public Consultation
Government launches public consultation to better understand society's perception of AI. It consists of a questionnaire for the resident population drawn up by the Department of Media, Connectivity & Digital Policy; the Ministry for Digitalisation; & the Luxembourg Institute of Socio-Economic Research. The consultation also provides a dedicated communication channel for stakeholders to share their opinions.

d.

AI4Gov Call for Projects 2020
Due to the success of the first iteration, further rounds of the AI4Gov call for projects are announced. Since 2020, a total of seven public-sector projects have been selected.

Elements of AI Course
Luxembourg introduces its own version of Elements of AI, a free online course developed in Finland & offered to all EU countries. Anyone interested in learning more about AI & its potential can take the course, regardless of age or background.

2021

conclusion

looking ahead

At Innovative Initiatives, a part of our job is to look ahead & anticipate the endless implications of new innovations—a burgeoning AI ecosystem & the new value chain it creates is one obvious example. However, as much as we try to predict what comes next, no one knows for sure.

The pandemic was a reminder of that. As we reflect on the past few years, its impacts are visible.

Innovation-focused events stopped, then went virtual, then adopted a hybrid format that took the best of both. Digital skills opportunities, such as through the Luxembourg Tech School, adapted to continue the crucial work of imparting skills in new ways. High-performance connectivity became a household concern as the nation transitioned to home offices & classrooms. Opportunities for face-to-face dialogue & collaboration within the startup & innovation community halted then rekindled through digital channels.

All seemed quiet at first, but we adapted & found momentum again. Innovative Initiatives continued fulfilling its responsibility to keep the public informed on topics concerning our information society, as illustrated through this report. We supported the evolution of events & digital skills opportunities, whose importance only increased.

We also pushed 5G ahead & supported the sector in demonstrating its worth to society through pilot projects—a successful & multifaceted exercise that was repeated in a joint third edition with partners.

Looking ahead, we predict that, sooner rather than later, sustainability will become as foundational as digitalization. Like digitalization, it will weave its way into every sector. At first, it will feel revolutionary & innovative, but with time, the sustainability of a business or tool or operation will be assumed, integrated into the earliest designs. This twin transition seems like the logical next chapter for innovation as we navigate a changing planet & the inconvenient truth of finite resources.

Innovative Initiatives plans to use its unique, multidisciplinary lens to explore sustainability & the role of skills, policy, connectivity & technology.

Regardless of what's to come, we will continue anticipating & responding so that our priorities reflect what the public needs from us.

Day in & day out, that's where you'll find us: at the intersection of information & society.

innovative initiatives

Originally launched by the Prime Minister as Digital Luxembourg, Innovative Initiatives drives positive transformation via digitalization. This public initiative strengthens the information society by supporting projects & sharing stories of innovation in four priority areas: digital skills, data policy, connectivity & new technology.
This progress report was prepared by a dedicated team at the Ministry of State's Department of Media, Connectivity & Digital Policy, which runs Innovative Initiatives.