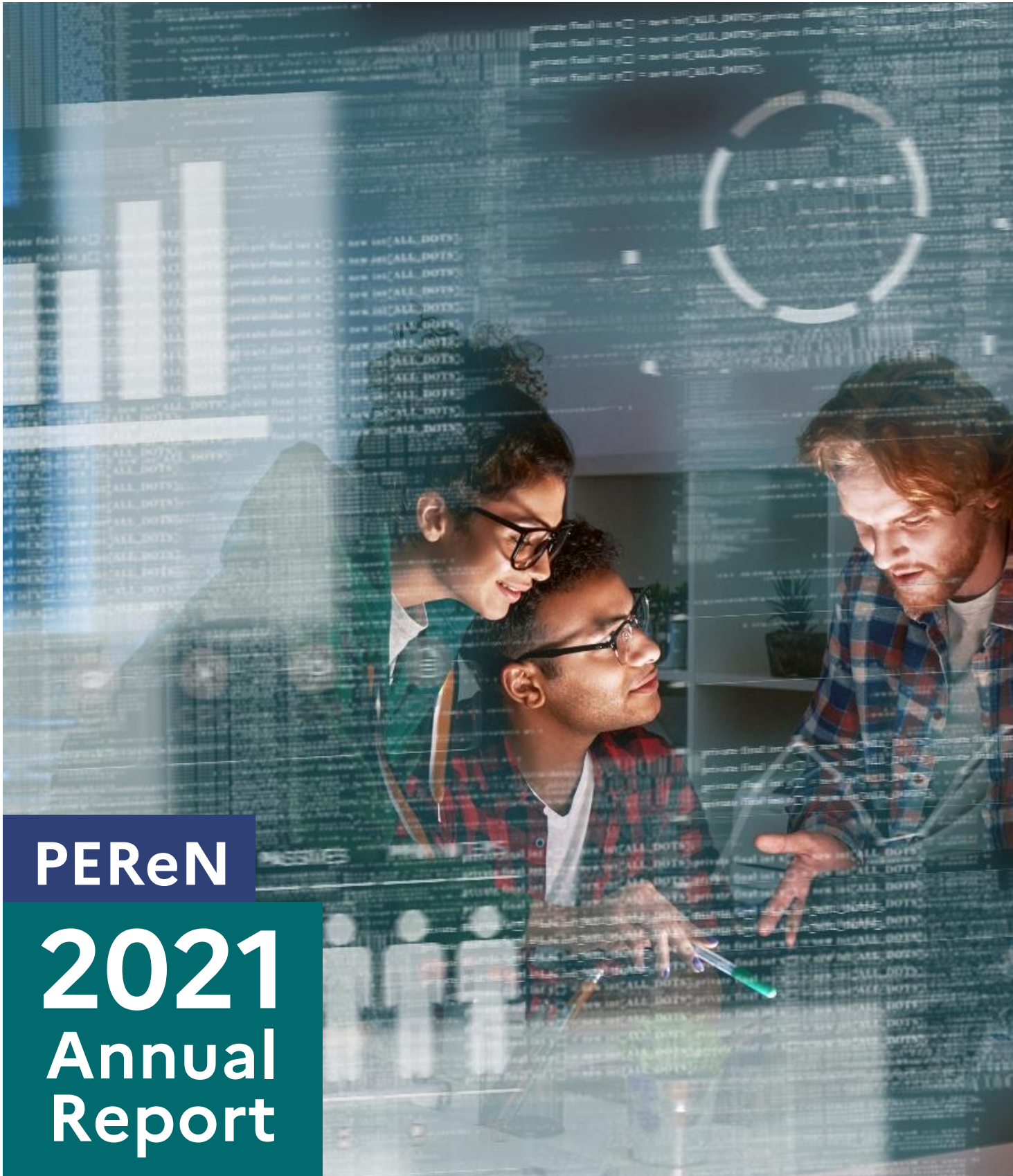




GOUVERNEMENT

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Égalité
Fraternité*

**Center of Expertise for
Digital Platform Regulation**



PEReN

**2021
Annual
Report**

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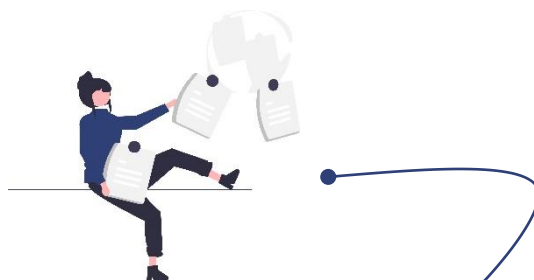
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Reader's Note:

Due to the very high level of confidentiality of some projects, only a portion of PEReN's ongoing work is discussed in this report and can be described in detail.

About the Center of Expertise for Digital Platform Regulation

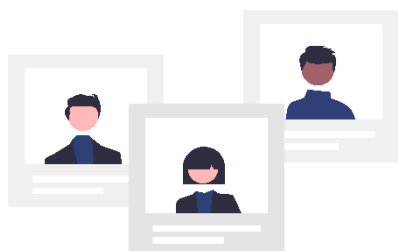
As a **department with national scope**, the Center of Expertise for Digital Platform Regulation (PEReN) is jointly overseen by France's **economic, communications and digital affairs ministers**. The Director General for Enterprise handles its administrative and financial management.



PEReN provides **expertise and technical assistance** in the field of **data science** to all government agencies, including independent administrative authorities and ministerial departments, involved in the **regulation of digital platforms**. It provides IT tools, studies and digital consulting, and is also involved in pilot and scientific **research** projects.

Its work is focused on:

- **Bolstering the effectiveness** of public policy by combining forces.
- **Gaining better** insight into how digital platforms work.
- **Supporting** the definition of regulations.
- **Fostering** knowledge sharing.



PEReN has a **team of highly qualified, expert data scientists**, including PhD holders and engineers, with rare technical skills in data analysis, source code, processing and the algorithmic auditing methods used by digital platforms.

FOREWORD



The recently founded PEReN attracts talent with rare skills and backgrounds to help redress the uneven distribution of technical expertise between government and major digital platforms. With a

small budget and big goals, the Center is high performing and has already had a tangible impact by working to shift the balance of technical expertise away from digital platforms and by spurring unprecedented coordination among sector regulators. PEReN also serves as a tool for sovereignty in that all of its projects are developed using its own resources and build government expertise.

Reducing asymmetry between government and Big Tech

Information asymmetry between government and tech companies has been a common thread of conversation. As regulators are inherently unable to access all of the information held by firms, they often employ incentives (such as information disclosure incentives) and even coercive methods (mandatory surveys, searches and hearings) to ensure that the information companies have provided them with is true and complete.

In complex technical fields such as artificial intelligence, big data and state-of-the-art computer science, it can be helpful to make specialised technical expertise available to regulators so that they are equipped to discuss directly with the platforms' engineers. PEReN has been asked on several occasions to participate in such meetings in order to differentiate purely technical arguments from those stemming from a company's strategic concerns.

Tech firms' efforts at transparency can result in them presenting an incomplete, skewed picture of the technical side of things. When the Center

participates in such exchanges, it has the opportunity to reframe the conversation: it is acceptable for a company to oppose a proposed regulation on grounds related to its interests, but it should not cloak a perhaps legitimate strategic stance behind opportunistic technical arguments.

Developing independent oversight capabilities

PEReN develops tools that allow it to independently verify information reported by platforms. Current oversight procedures consist chiefly of reviewing platforms' own publications (e.g. transparency reports) and sending them surveys. While there may not be a specific reason to suspect that a given company is deliberately providing false information to a regulator, error cannot be ruled out, and in rare cases, a company can try to conceal information or an illegal activity if they know they are being scrutinised. The Volkswagen emissions scandal that rocked the automotive sector shows how far some companies are willing to go to outsmart overly routine testing. Having the possibility to conduct surprise checks independent of major digital platforms is certainly a key part of ensuring that big tech players are fully complying with the legal framework under which they operate.

In this vein, PEReN is developing black-box testing tools that allow regulators to review the operation of platforms' algorithms externally. These tools are not intended to provide a full, detailed understanding of how the algorithm works, but instead to locally test algorithms' compliance with certain criteria examined by regulators, such as the comprehensive disclosure of algorithmic ranking parameters (in accordance with the Platform to Business (P2B) Regulation) and the absence of discriminatory practices, whether economic (self-preferencing by platforms with a dominant position) or social (discrimination on the basis of gender, religion, etc.).

Endeavouring to furnish an initial assessment of platforms' compliance with certain criteria, these tools will provide valuable information that regulators can incorporate into their work, as they alone may determine a company's non-compliance. The tools will also make it possible to ensure more continuous monitoring of platforms' conduct in order to more rapidly initiate regulators' oversight work.

Unprecedented inter-regulator coordination

PEReN has redefined what coordination looks like in that it provides technical assistance to a wide range of regulators with different remits and sectors of expertise. In addition to serving as a forum for exchange, given its role in developing and sharing tools that facilitate oversight, it does not in any way step on the toes of regulators, as it has no statutory regulatory powers.

On the contrary, PEReN stands ready to assist regulators and fulfils both a leadership and a technical coordination role. The Privacy Sandbox project described in this report is a prime example of what the Center does: its creation and leadership of a working group enables all government departments to benefit from the same level of in-depth technical analysis, so as to harmonise inter-departmental understanding while maintaining each department's independence and the potential confidentiality of their assessment of compliance in their respective remits.

This working group allows for an unprecedented form of technical coordination and level of technical analysis, while preserving regulators' independence and respect for their work.

Future challenges

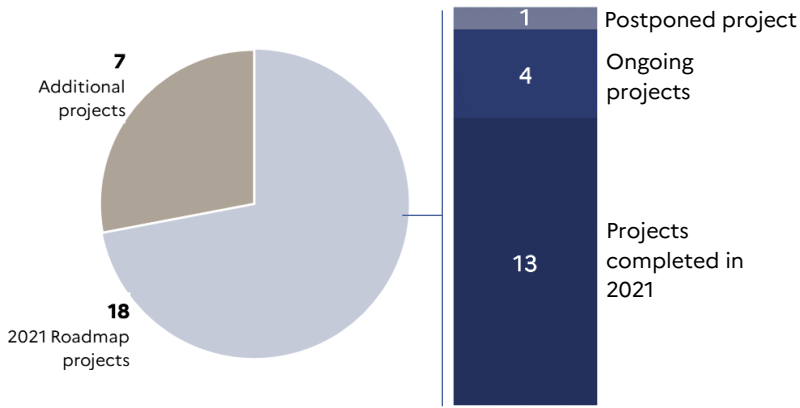
The value of an organisation like PEReN is proven by its many achievements in a span of less than two years and its compatibility with the European Union's plans to regulate major digital platforms. This value spurs us to widen our initial purview by taking up artificial intelligence as a topic of study, especially given how interrelated AI is with issues surrounding the regulation of digital platforms, which make much use of this type of technology.

Indeed, PEReN's organisational structure, as a leading technical unit responsible for steering inter-departmental coordination, is perfectly suited to tackling AI, which is set to become an increasingly ubiquitous feature of our lives. In this area too, providing readily available leverage to an array of regulators is an excellent means to bolster effective government action, while enabling an unprecedented degree of coordination at national and European levels, in which PEReN will continue to play a role and bring all its expertise to the table.

Nicolas Deffieux
Director, PEReN

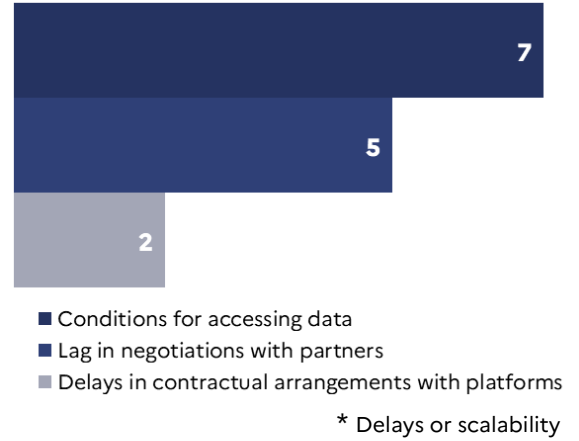
2021 Key Figures

25 projects carried out, including...



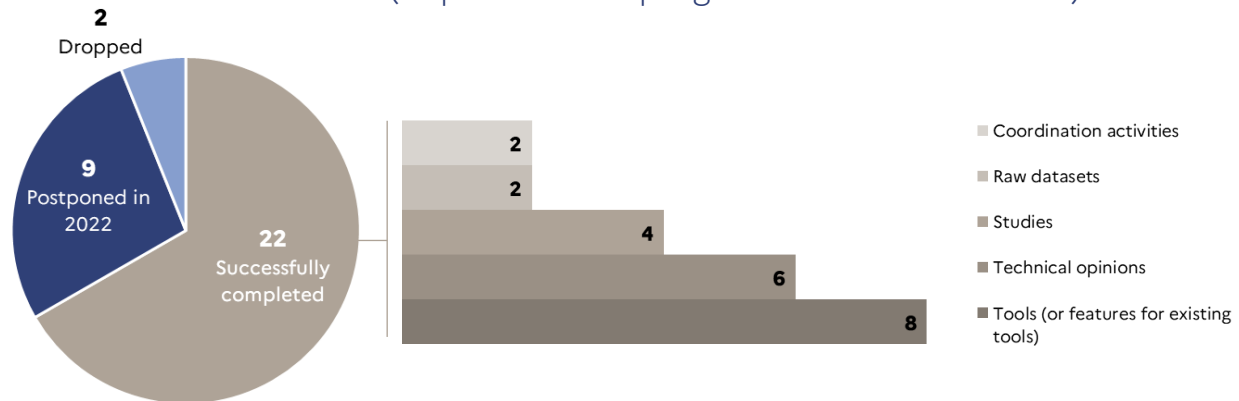
* No projects were dropped.

14 projects encountered issues* due to...



* Delays or scalability

33 deliverables scheduled (as part of work programme or external to it)



7

Agreements signed with our partners
(Average time-to-signature for agreements: 120 days)



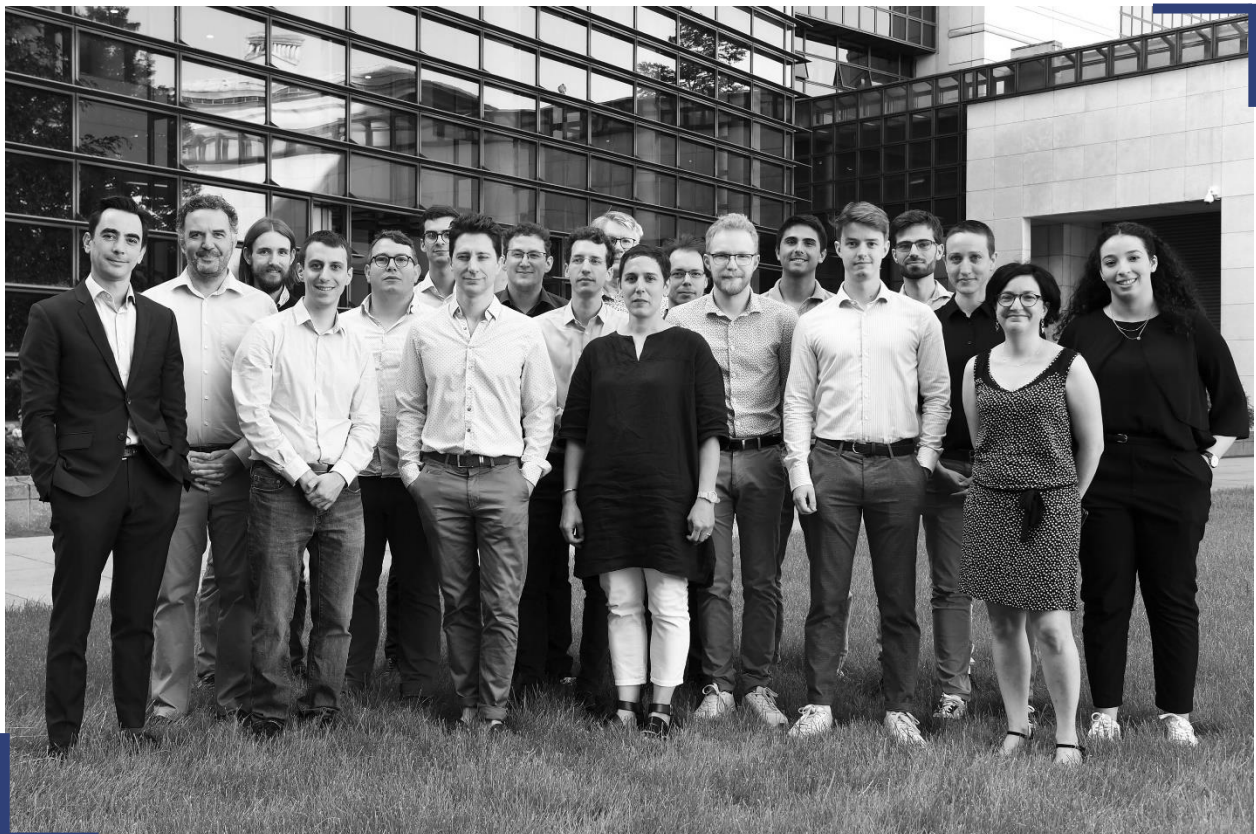
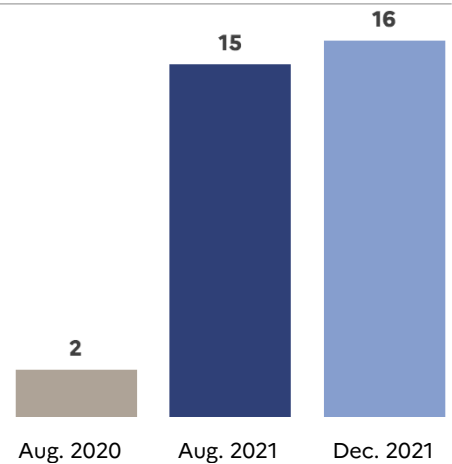
€130k

spent in 2021, funded in large part by the Ministerial Transformation Fund (FTM) and the *France Relance* recovery plan. This expenditure excludes payroll and office occupancy costs, which were covered by the Directorate General for Enterprise (DGE).



Fast-growing staff

Cap set at 20 FTEs



2021 Highlights

PEReN grew out of research that was undertaken starting in 2018 as part of an examination of new digital regulations. Created on 31 August 2020,¹ the Center has since worked to make a name for itself as a leading partner of digital platform regulators.

2020

7 employees

31 AUGUST

PEReN established by decree

9 SEPTEMBER

1st multilateral meeting with partners held

18 DECEMBER

2nd multilateral meeting with partners held

2021

16 employees

APRIL

Agreement signed with 

JANUARY

PEReN's 2021 roadmap approved by the economic, communications and digital affairs ministers

MAY

Agreements signed with  

5 MAY

peren.gouv.fr launched

JUNE

Servers purchased for PEReN

9 JULY

- 3rd multilateral meeting with partners held
- Cédric O, Minister of State for Digital Affairs and Electronic Communications, presided over official opening of new premises

JULY

Agreement signed with 

AUGUST

Agreement signed with 

SEPTEMBER

Agreements signed with  

25 OCTOBER

The French Act on the Regulation and Protection of Access to Cultural Works in the Digital Age was adopted, with PEReN's role outlined in Article 36.

19 NOVEMBER

4th multilateral meeting with partners held

¹ Decree no. 2020-1102 of 31 August 2020 establishing a national-level unit known as the Center of Expertise for Digital Platform Regulation (PEReN), <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000042297154> (in French).

Part 1

Establishing a **groundbreaking centre of** technical expertise

Digital platforms are an ever-growing part of our daily lives, but the sweeping digital revolution they spawned has stirred up criticism and concern – and highlighted the need to regulate online services due to their impact on society, e.g. by safeguarding citizens' right to privacy, combating disinformation and ensuring compliance with competition law. PReN was created in the context of a wave of initiatives seeking to regulate the highly innovative digital ecosystem. This trailblazing and innovative Center serves to strengthen the government's dialogue with digital platforms, bolster France's action on regulating digital players, and share knowledge between government departments and regulatory authorities.

Launching an ambitious recruitment drive

Established in August 2020, PEReN's success as a unit is pinned on regularly hiring new talent who are primed to put their expertise to work. At the end of 2020, the Center had a total of seven employees. An active recruitment drive brought this number up to 16 employees (15.5 full-time equivalent, or FTE, staff) as of 31 December 2021, despite a very restricted pool of talent for the skillsets needed.

To carry out its work, PEReN has brought together a team of data scientists and developers with rare, advanced skills and knowledge in the data science field (e.g. machine learning/artificial intelligence, computer programming, algorithmics).

In 2022, with a cap of 20 FTE staff, the Center will round out its expertise by welcoming:

- Two data scientists specialising in image recognition in order to put PEReN at the cutting edge of techniques in this area, with a view to applying them in future projects.
- A front-end developer to meet data visualisation needs (dashboards, data exploration) for end users provided in a user-friendly, tried and tested environment.
- A lead coordinator, whose work, as provided for under PEReN's establishing decree, will involve coordinating a community of government experts and inter-departmental information sharing, as well as the open source code policy set to come into effect in 2022.

How is PEReN's work programme determined?

PEReN draws up its annual roadmap in close cooperation with partner departments, through bilateral discussions with each individually to ascertain any specific needs, and through multilateral meetings to jointly determine the order of priority of projects. Projects for the upcoming year are selected based on the workload involved being proportional to the value created for partners, as well as on their technical feasibility, their legal framework, and, where possible, opportunities for inter-departmental sharing.

In 2021, this partnership was behind over 20 operational and research projects.

In accordance with its establishing decree, PEReN submits its roadmap annually to its three line ministers (economic, communications and digital affairs).

Putting in place secure and approved IT infrastructure

In 2021, PEReN met the major challenge of getting up and running in a short span of time to effectively lead the more than 20 projects on its agenda. The Center's first full year of operation saw it make great strides and significantly increase both its material and human resources.

PEReN's first initiative involved setting up its own technical architecture so that it has full control over its technology decision-making and the data available for collection and storage, and is able to secure the long-term use of these tools and enable their use by partners at no additional cost. One feature of the Center is its concern for building expertise from within, which is why it does not outsource any of its work.

In concrete terms, this undertaking involved:

- The purchase of a set of components in order to set up fully operational servers that cater for the Center’s internal needs as well as the hosting of application programming interfaces (APIs) made available to partner government organisations.
- The hiring of an employee responsible for managing information systems security.

To ensure the proper implementation of the government’s Information System Security Policy (PSSIE), in 2021 PEReN debuted a two-step approval process. The first step entails the information system architecture (which made possible an unqualified approval for a three-year period). The second involves a series of successive approvals for the Center’s application services, with priority given to those that ensure information sharing between various external users, particularly through APIs. In addition to the PSSIE, the General Security Guidelines (RGS), which aim to strengthen user trust in electronic services provided by the government, will factor into the approval process for application services.

Digital platforms explained

Article L.111-7 of the French Consumer Code defines online platform providers as follows: any natural or legal person offering, on a professional basis, including for free, an online communication service to the public that is based on:

1. Ranking or referencing content, goods or services offered or published online by third parties by using computerised algorithms.
2. Allowing several parties to get in contact with one another for the sale of goods, the provision of services or the exchange or sharing of content, goods or services.

Digital platforms, as intermediary services, can be:

- E-commerce marketplaces
- Community platforms
- App stores

Bolstering the legal framework governing access to data

The scope of PEReN’s work in 2021 focused on two areas:

- Supporting government departments in their work on regulating online platforms through agreements which establish PEReN’s remit and cover the regulatory aspects of the partnership.
- Direct or participate in pilot research projects, whether on its own or in collaboration with research institutions, to create and develop tools that improve understanding of how digital platforms work. This was the impetus behind PEReN forging a partnership with the National Institute for Research in Digital Science and Technology (INRIA) and the latter’s Regalia pilot project,² which is focused on algorithms.

In its first full year of operation, PEReN – striving to define the parameters of its partnership with government institutions – stressed the need to expand its field of intervention. Since it was founded in August 2020, the Center has encountered difficulties in gaining access to data, including publicly available data, useful for its

² INRIA, “The Regulation of Digital Platforms: French Government Takes the Lead”, 6 May 2021 (<https://www.inria.fr/en/regulation-digital-platforms-pere-regalia>).

work, and certain digital platforms have refused to cooperate with it. These issues, in addition to hindering the progress of the work on its agenda, could lead to the production of unsuitable regulatory tools. The lack of a sufficiently detailed legal framework, particularly concerning the automated collection of data, including publicly available data, spurred lawmakers to give PEReN a more expansive role in this regard.

Article 36 of the French Act on the Regulation and Protection of Access to Cultural Works in the Digital Age³ provides a remedy to the situation by granting a government department the power to collect publicly available data from the websites of online platform providers in order to conduct experiments. Its implementation was clarified in April 2022 by a decree issued after consultation with the French Supreme Administrative Court and following an opinion from the French Data Protection Authority (CNIL). The decree names PEReN as the center referred to in Article 36 of the Act.

Following these legislative and regulatory efforts, PEReN's responsibilities are divided into three main areas:

- PEReN can enter into agreements with government departments or independent regulators involved in the regulation of digital platforms.
- PEReN can build prototypes of regulatory tools on its own initiative, and for this purpose exclusively collect publicly available data, without platforms being able to object.
- PEReN can conduct public research.

2022: Decree cements PEReN's remit

PEReN reached another milestone in 2022 with the publication, on 23 April, of the French Supreme Administrative Court's decree for the implementation of Article 36 of the French Act on the Regulation and Protection of Access to Cultural Works in the Digital Age. Communicated to the European Commission, the draft decree was reviewed for an opinion by the CNIL. Its content primarily focused on bolstering the legal framework governing PEReN's access to publicly available data from platforms so that it can perform its work of designing and experimenting with tools. The decree represents a major step forward which will facilitate a number of experiments that had an uncertain outcome) prior to its publication. Specifically, the decree:

- Names PEReN as the government center permitted to lend its expertise to independent regulators responsible for overseeing digital platforms.
- Details the conditions under which PEReN may use its power to experiment in order to collect data from the websites of online platform providers.
- Describes the management system for personal data available for collection.

³ Act no. 2021-1382 on the Regulation and Protection of Access to Cultural Works in the Digital Age, adopted on 25 October 2021 (<https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000044245615>) (in French).

Part 2

Offering technical solutions **with a resource-sharing approach**

To regulate digital platforms, the relevant public authorities need to have the technical skills and specific tools to effectively understand the practices of operators in the sector. In keeping with major and continuous innovation in the field, PEReN provides leading-edge expertise and leverage with a view to sharing developed solutions between government departments.

Facilitating data exchanges between municipalities and furnished holiday letting platforms

Enacted in 2018, the ELAN Act⁴ includes a component dedicated to minimising the strain on access to housing. It also provides for the data exchanges between furnished holiday letting intermediaries and municipalities to enable the latter to ensure, if necessary, that main homes are not being rented out for more than 120 days per year.

As part of implementation of this legislation, PEReN provided support to the Directorate General for Enterprise (DGE)⁵ and the Directorate for Housing, Urban Planning and Landscapes (DHUP)⁶ in setting out and implementing an experimental platform designed to:

- harmonise, streamline and secure information shared between letting intermediaries and municipalities by installing an API⁷
- improve the efficiency and quality of the system by setting up a consultation interface for municipalities
- pooling efforts to amend and reconcile data for municipalities. The national address database will be used to provide further information about the addresses disclosed and draw on map tools.

PEReN developed the tool in 2021 and it will be trialled in 2022. Discussions will be held to devise, in collaboration with various partners, scenarios for mainstreaming the tool and to capitalise on this testing with the cooperation of a number of municipalities and operators of online furnished letting platforms.

Thanks to this project, the DGE was in particular able to come up with an innovative approach, perform real-world testing on a digital tool with a large number of stakeholders, and examine the modus operandi and constraints of each stakeholder to enhance discussions on the regulatory framework in place.

More broadly speaking, this project is an initial trial stage for a data exchange platform used by digital operators and the public sector, providing useful information for future issues for example. These include the implementation of upcoming regulations such as the Digital Markets Act (DMA) and the Digital Services Act (DSA), and of the possible interaction procedures put in place to ensure compliance with certain obligations (see Part 4).

Monitoring mobility data: a better understanding of route planner platforms

As part of its duty to monitor the opening and reuse of mobility data, the Transport Regulatory Authority (ART) is looking to gain greater insight into the workings of tools that reuse open data in plotting suggested routes (a route planner platform).

With the development of route planner platforms for multi-modal transport (bus, train, car etc.), the ART wanted to better understand these comparison platforms to adapt and specify the controls it will be required to carry out. PEReN provided and adapted an API so that requests can be sent to the route planners and the suggested routes can

⁴ Housing, Planning and Digital Technology Reform Act no. 2018-1021 signed on 23 November 2018 (<https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000037639478/>, in French only).

⁵ Ministry for the Economy, Finance and Industrial and Digital Sovereignty.

⁶ Ministry for the Ecological Transition and Regional Cohesion.

⁷ Application Programming Interface. For more information: CNIL, <https://www.cnil.fr/fr/definition/interface-de-programmation-dapplication-api> (in French only).

be analysed. Initial testing was conducted on ten or so route planners based on the route requests submitted nationwide or at a two-region level. It resulted in a better understanding of the ranking criteria proposed by the route planner platforms. The findings will be published by the ART in a report scheduled for release in mid-2022.

Developing a benchmark of the employment conditions of platform workers

Over the last few years, increasing use of digital mobility and delivery platforms (private hire vehicles, goods delivery) heightened by the COVID-19 pandemic, has resulted in an exponential increase in the number of workers offering their services on these platforms.

Online platforms have a corporate social responsibility to their workers (under Article L. 7342-1 of the French Labour Code), and must, in accordance with the Mobility Reform Act of 24 December 2019,⁸ publish indicators on their website relating to the period of employment and income earned by their workers (Article L. 1326-3 of the French Transport Code, Decree no. 2021-501 of 22 April 2021).⁹

Since this requirement was effective from 1 March 2022, in 2021 PEReN provided technical support to the ministries for the economy and ecological transition in setting out and formalising these indicators, leading to the publication of the Order of 12 January 2022.¹⁰ Following this definition stage, the published indicators were compiled and aggregated across all platforms.

In addition to the time saved and quality gains achieved by this tool, consolidating and monitoring the collected indicators over time will ensure a better understanding of the employment conditions of workers on digital platforms, resulting eventually in the competent authorities performing a more effective assessment of these conditions.

“With their expertise, readiness and strong proposals, the PEReN teams formed a successful partnership with the ART, with regular adjustments made to meet our needs”.

Transport Regulatory Authority

Methods for gaining an insight into how applications – particularly instant messaging apps – work

Smartphone users constitute a significant and growing proportion of digital platform users, with some platforms only being available on this type of device. Platforms therefore tend to adapt their algorithms (and the data they use) to smartphone users.

⁸ The Mobility Reform Act of 24 December 2019 (<https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000039666574/>, in French only).

⁹ Decree no. 2021-501 of 22 April 2021 on indicators relating to the activity of workers using digital intermediation platforms (<https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000043416674/>, in French only).

¹⁰ The Order of 12 January 2022 on the method for determining non-representative values in calculating the indicator for workers' waiting time in relation to mobility platforms (<https://www.legifrance.gouv.fr/loda/id/JORFTEXT000045119079/?isSuggest=true>, in French only)

Over-the-top (OTT¹¹) instant messaging apps such as WhatsApp, Facebook Messenger and Signal are interesting cases in this regard. Given their many features and accessibility, they have significantly developed in recent years, and offer a range of interpersonal communication functionalities. Despite this, while requirements concerning the quality and availability of telecommunications services are closely monitored, primarily by the Electronic Communications, Postal and Print Media Distribution Regulatory Authority (ARCEP), there have so far been few studies on the quality of service provided by OTT messaging apps.

In light of this, in 2021, PEReN developed an experimental mechanism to analyse how Android mobile applications work under the device's various realistic conditions of use relating to such aspects as geolocation, battery and network quality. This was intended to determine how these different applications operated in various usage scenarios.

This proof of concept was made available to ARCEP in 2022 as part of a project to measure the quality of services provided by OTT instant messaging applications by adjusting the network quality (e.g. higher or lower latency, faster or slower broadband), which will be published by ARCEP.

The assets developed by PEReN under this initiative can be reused in other projects that require network quality conditions or any automated testing on mobile applications to be adjusted.

Ensuring a collective technical understanding of Google's Privacy Sandbox

Online advertising has undergone major changes in recent years. While advertising was initially context-based, in that it matched the content of the webpage on which it was displayed, it has gradually become heavily personalised, reflecting the individual characteristics of users. Personalised advertising has entailed an increasing demand for personal user data, information that is primarily obtained by analysing browsing histories that can be accessed via cookies, which are defined by the French Data Protection Authority (CNIL) as "files stored on a server in a user's terminal and linked to a web domain".¹²

To fulfil the obligation to protect the privacy of internet users, Google announced in 2019 that it would phase out the use of third-party cookies¹³ by the end of 2023 in its market-leading web browser Chrome. At the same time, Google is proposing a technological alternative in the form of the Privacy Sandbox: a collection of tools billed as both more privacy-friendly and economically viable. Set to completely shake up the online advertising ecosystem, this new solution is raising a number of doubts among public and private stakeholders.

In light of the major challenges emerging from this change, in 2021 PEReN created and led a working group with all the government departments involved in the project: the Competition Authority, the CNIL, the ministries for culture and the economy and the Regulatory Authority for Audiovisual and Digital Communications (ARCOM). This working group is striving to carry out a joint technical analysis to ensure a shared understanding of the upcoming Privacy Sandbox, the challenges it poses and

¹¹ OTT services allow users to transfer videos, audio clips and data over the internet, with operator involvement not necessarily required.

¹² CNIL, *Définition - Publicité ciblée* (<https://www.cnil.fr/fr/definition/publicite-ciblee>, in French only)

¹³ CNIL, *Définition - Cookie tiers* (<https://www.cnil.fr/fr/definition/publicite-ciblee>, in French only).

documentary monitoring in this field. The departments involved can gain in-depth technical insight into the Privacy Sandbox while remaining independent, in order to assess the impacts of this change on their respective remits.

On the back of collectively producing this knowledge, PEReN devoted the third issue of its "Shedding light on..."¹⁴ online series to break down the economic, technical and data privacy issues emerging from this solution that is still under development by the US giant.

"We are very proud to have entered into an agreement with PEReN. Its in-depth expertise is an undeniable asset in the most technical cases".

Competition Authority

¹⁴ Shedding light on... n° 3 – Privacy Sandbox: a collection of tools for third-party cookie-less online advertising (https://www.peren.gouv.fr/en/actualites/2022-04-28_eclairage_sur_privacy_sandbox/).

Offering technical solutions with a resource-sharing approach

Our eight projects in 2021

Furnished holiday lettings

At the request of the Ministry for the Economy, Finance and Industrial and Digital Sovereignty, PEReN carried out the testing phase for a portal allowing data to be exchanged (API and visualisation interface) between furnished holiday letting intermediaries, regional authorities and government departments. [Shareable asset: model for a secure data exchange platform]

Scraping publicly available data

With a view to sharing resources, an API for scraping publicly available data was provided to any partners with data scraping needs and the legal powers required. [Shareable asset: API for scraping data]

→ Projects using the shareable asset:

Investigative power of the Competition Authority

PEReN provided technical support to the Competition Authority, within the scope of its investigative power, by providing the software code, processor time and an employee appointed as an external rapporteur (Article R.461-5 of the Commercial Code).

General terms of use (GTU) of digital platforms

In cooperation with the Ministry for Europe and Foreign Affairs, PEReN supported the development of the Open Terms Archive tool for recording changes to the GTU of digital platforms: development of the tool's scope and features for handling complex formats. [Shareable asset: consolidated historical data relating to the GTU of online platforms]

Monitoring mobility data

PEReN provided and tailored an API so that it can send requests to route planners and better understand how they work. [Shareable asset: optimisation techniques]

Activity of workers on mobility platforms

At the request of the ministries for the economy and the ecological transition, PEReN was involved in setting out the indicators relating to the period of employment and income earned by mobility platform workers (private hire vehicles, goods delivery), and in developing a tool for the collection and automated aggregation across platforms of published indicators. [Shareable asset: data visualisation methods]

Service quality of OTT flows

PEReN designed an experimental system to analyse how Android mobile apps operate under the device's various realistic conditions of use such as geolocation, battery and network quality. ARCEP provided this proof of concept as part of a project to assess the service quality of instant messaging apps. [Shareable asset: technical system for simulating network conditions]

Google's Privacy Sandbox

PEReN led a working group with all the government departments involved in the project (Ministries for culture and the economy, the Competition Authority, the CNIL, ARCOM), focused on the joint technical analysis of the upcoming Privacy Sandbox and on monitoring in this field (the study is available here: https://www.peren.gouv.fr/en/actualites/2022-04-28_eclairage_sur_privacy_sandbox/).

Part 3

Gaining **better insight** into how platforms **work**

The importance of consent in online advertising, the virality of content and artificial expansion of its reach, automated accounts and so on: deciphering how digital platforms work is one of the cornerstones of adapted regulation that is in line with continual innovation. On its own initiative, or at the request of its partners as is more often the case, PEReN leads projects that examine the features of these AI systems.

Increasing the effectiveness of the right to data portability as set forth by the GDPR and ensuring a better understanding of how platforms work

In addition to its provisions on such matters as conditions for lawful processing of personal data, the right to object or amend and data retention period limits, the General Data Protection Regulation (GDPR) in particular guarantees digital platform users the right to the portability of their personal data (Article 20). In other words, users may ask to receive their data that has been provided to a platform in a format that can be easily processed by a machine, for personal use or for the purpose of transmitting it to a third party of their choice.

In practice, there are still difficulties in exercising this right, either because of the lack of technical solutions on the platform side or because the data is retrieved by individuals in formats that are difficult to process.

To facilitate the process of users exercising their right to data portability, in 2021 PEReN created a prototype for an innovative data visualisation and anonymisation tool.

Based on the right of platform users to retrieve their data, the objectives of this project were threefold: (i) streamlining the procedures for users, (ii) developing intuitive resources for visualising data for their own purposes, and (iii) anonymising data so that users can share it with third parties if they wish to do so. In respect of the third objective, PEReN has worked closely with the CNIL to ensure that anonymisation techniques are state of the art. Anonymised data may be shared in order to analyse how digital platforms work if the user decides so.

As well as meeting GDPR compliance assessment requirements, this experimental tool illustrates the feasibility, thanks to recent research, of using a model for producing highly specific anonymised data. This data will provide more detailed information than that resulting from the disclosure requirements imposed on platforms, which can then be used in analyses of public policies.

“When it comes to sharing knowledge and developing pilot projects, PEReN’s expertise is invaluable to us. We are particularly excited about the prospect of continuing this partnership and collaborating on new projects”.

CNIL

Examining the feasibility of detecting viral content based on the nature of its dissemination

Today, social media is gaining an increasingly significant foothold as the public’s source of information. Some of the content published, considered viral, is disseminated at an exceptionally fast rate compared to the average content published. While this viral phenomenon may be in itself normal on these platforms, it can sometimes be

exploited to spread false information, and can even constitute attempted manipulation orchestrated by foreign states in the run-up to elections for example. Understanding the mechanisms behind the dissemination of content is of crucial importance (i) to assess the implementation of regulations in force, such as those provided for in the Act of 22 December 2018 on combating the manipulation of information,¹⁵ and (ii) to support new regulations such as the DSA.

As part of these discussions on the new regulations to combat the manipulation of information, the Digital Platform Regulation Delegation (Ministry for Culture) and ARCOM assigned PEReN the responsibility of examining the technical feasibility of measuring the virality of information disseminated on social media. A focus is placed on assessing the feasibility of tools that can evaluate the prevalence of potentially problematic publications, with no need to analyse their content or personal data.

To minimise personal data use and comply with the GDPR, PEReN has focused its research on methods of measuring virality based on the nature of the dissemination of the information (dynamics of dissemination, number of accounts helping with dissemination, number of persons exposed etc.). This is because these methods are not based on content analysis nor on the persons involved in the dissemination, enabling the development of a tool that can analyse virality on platforms without relying on individual data. PEReN focused its research on the French-speaking community on Twitter.

This project, extended in 2022, will home in on the principle of high visibility and seek to confirm the hypothesis that content deemed false by fact checkers has virality indicators that are different to those of content deemed true.

Innovation in the development of an external analysis method for black box algorithms

As the crux of the digital platform model, algorithms are used to develop product search, recommendation, pricing and classification features. The increasing complexity of algorithms often makes it unclear how they work, meaning that detailed analysis of the parameters applied cannot be performed.

While there has been considerable research on algorithm development, research on their workings is patchy and fragmented. To adopt a proportional approach, and taking into account the downsides for a platform to grant unlimited access to the source code and training data (it being operationally complex and raising issues concerning intellectual property and personal data protection), PEReN launched exploratory work into the development and classification of analysis procedures for less intrusive algorithms. This initiative seeks to develop a practical prototype tool based on an exploratory “black box” method, i.e. without access to the source code, model or data forming the AI system. Adopting the scientific testing approach used in physical sciences, PEReN's approach revolves around statistical analysis of algorithm responses on carefully chosen inputs to identify their main operating principles and local biases.

¹⁵ Act 2018-1202 of 22 December 2018 on combating the manipulation of information (<https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000037847559/>, in French only).

In collaboration with the Regalia Unit of the INRIA research agency, a first step was made in 2021: Using artificially compiled data, PEReN was able to validate the methodological and technical basis of its approach to identifying major algorithmic parameters (as covered in the Platform to Business – P2B – regulation),¹⁶ applied to a pricing algorithm. PEReN can in this respect identify causal relationships between variables as well as hidden variables involved in the end result. In 2022, this algorithm analysis model will be tested in a real-world scenario using actual data.

¹⁶ Regulation (EU) 2019/1150 of the European Parliament and of the Council of 20 June 2019 on promoting fairness and transparency for business users of online intermediation services (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R1150>).

Gaining better insight into how platforms work

Our seven projects in 2021

Anonymisation of personal data in compliance with the right to portability (GDPR)

PEReN developed a prototype for a tool designed to visualise and anonymise personal data acquired by individuals within the context of the right to data portability set forth in the GDPR.

Method for estimating the economic value of consent to receive online targeted advertising

PEReN drew up a proof of concept on quantifying the added value of consent granted by users to enable cookies in various scenarios.

Viral content detection and characterisation

At the request of the Ministry for Culture, PEReN launched a pilot study into the methods for identifying potentially problematic viral content based on the nature of its dissemination, as opposed to directly analysing the content or individuals involved.

Assessment of the prevalence of bots on Twitter

In cooperation with the *Autorité des Marchés Financiers* (AMF) and the Ministry for Europe and Foreign Affairs, PEReN developed a prototype of a tool for detecting automated accounts (bots) based on the rigorous analysis of the metadata of accounts. With this tool, scaling up is possible, and no personal data needs to be used.

Virality of sets of hashtags on Twitter

PEReN is currently establishing an operational scoreboard for monitoring sets of hashtags on Twitter to be used by VIGINUM, a technical and operational government department responsible for monitoring and protecting against foreign interference online.

Analysis of videos posted on YouTube channels and their consumption

PEReN conducted an exploratory study to address the needs of HADOPI (which is now ARCOM) to classify and quantify the content and categories available on YouTube across the French territory (the study is available in French here: <https://www.peren.gouv.fr/revue-presse/2021-hadopi/>).

Creation of an external analysis method for black box algorithms

In collaboration with INRIA's Regalia Unit, PEReN developed a prototype for the external analysis performed by black box algorithms, a non-intrusive method that grants no access to the source code, model or data forming the AI system.

"Our interministerial partnership with PEReN is an excellent opportunity to pool our expertise, particularly in data science, so as to enhance the government's operational capacities in protecting against foreign interference online."

VIGINUM

Part 4

Preparing and supporting the definition of regulations

From the outset, PEReN has harnessed its technical expertise for analyses underlying the revision and development of the regulatory framework for digital platforms at national and European levels. As a member of the “Digital Platform Regulation” Inter-Administration Taskforce, PEReN has helped establish the French position in relation to EU negotiations concerning in particular the DMA and DSA draft regulations.

Assessment of online recommender algorithms: comparative analysis of possible regulatory approaches

Digital platforms often use recommender algorithms to offer personalised content to their users. While these tools have proven their worth, particularly amid an abundance of information, they can also exhibit bias in selecting recommended content, resulting for example in issues of representativeness. Regularly assessing these algorithms is therefore vital to detect any impacts that could be contrary to requirements for diversity and information in certain cultural fields in particular.

The Directorate General for Media and Cultural Industries at the Ministry for Culture, as part of its involvement in an international multi-stakeholder working group on diversity in online content, requested that PEReN, in collaboration with INRIA, conduct a feasibility study to assess the potential conditions for an audit of suggested content algorithms. This study took stock of potential methods for assessing recommender algorithms, based on a twofold increase in costs for the regulator and the audited platform, and in the granularity of the audit.

To achieve this, following on from initial work on algorithm analysis, PEReN and INRIA developed a “black box” method that provides no access to the source code, model or data forming the AI system. From this starting point, the study explored the methods that could be used by a third-party auditor to collect representative data that is essential for any statistical analysis of an algorithm under these conditions, and also examined three typical algorithm analysis scenarios:

- measuring the cross-exposure based on a dual segmentation of users and content: is an algorithm more likely to recommend a certain content category to a certain user category for example?
- identifying the potential bias of the algorithm i.e. identifying whether there are categories that are recommended more than others
- creating a simplified model of the algorithm to understand the main parameters used in its decision making

As part of an EU regulation currently being developed, this project has been France’s contribution to an international, multi-stakeholder working group and was the subject of a presentation in May 2021.¹⁷ This study, that sets out the first theoretical underpinnings of the external analysis methods for black box algorithms, co-developed by PEReN and INRIA, paved the way for the development of validations and experimental demonstrations for these methods using specifically identified algorithms.

What security issues arise from opening app stores?

The democratisation of smartphones has brought with it radical changes in the way we install our applications. With smartphones, we have shifted from an open and decentralised model – with content downloaded from third-party sites onto our computers – to a centralised and at times closed model on our smartphones. Now,

¹⁷ Methods for assessing content algorithms (<https://www.peren.gouv.fr/actualites/publication-etude-methodologie-audit-algorithmes-dgmic/>, in French only)

applications are often – and in some cases exclusively – installed using the application store of the operating system developer.

This restricted distribution method is being challenged by publishers and several national and international regulations under development, including the DMA which aims to open up the distribution of applications to third-party sources. This openness is often justified on economic grounds, but it also raises questions concerning user protection, in particular against malicious acts. The issue lies in how to provide greater protection against malware to users while also offering them a wider choice and competitive prices for downloadable applications.

As part of the technical support provided to teams from the Ministry for the Economy, Finance and Industrial and Digital Sovereignty overseeing negotiations on the EU's DMA, PEReN carried out an analysis of the security issues relating to the opening of operating systems to third-party application stores.

The analysis is designed to answer the following questions: what is malware, how is it spread, and what protective measures can be taken against it? And how can the security of users be guaranteed while offering them a wider range of applications? In reference to the practices presented as state of the art in the field, the analysis concludes that applications could be distributed on smartphones using a more open and decentralised model without compromising the level of user security.

This analysis was re-examined in the second issue of the PEReN's online series "Shedding light on...", published in February 2022.¹⁸

Technical insight into the interoperability of online services

In 2020, the "Digital Platform Regulation" Inter-Administration Taskforce was established. It is a working group headed up by the DGE (Ministry for the Economy, Finance and Industrial and Digital Sovereignty). As a forum for discussion and analysis designed to develop lines of argument concerning the prospect and methods of regulating digital platforms, the taskforce contributed to forming the position of French authorities in EU negotiations, in particular on draft EU regulations (DMA and DSA).

As a member of this government think tank, PEReN provided, in partnership with INRIA, analyses intended to facilitate understanding of technical topics and solutions that could resolve the issues raised. It is in this respect that the two partners took an interest in the issue of interoperability between digital platforms.

Using typical scenarios as a basis, the analysis was intended to present the various concepts that are usually classified under the term "interoperability", distinguishing it from the similar concepts of portability and compatibility. Other distinctions have also been defined: based on the objectives of interoperability models between digital platform services (the interconnection of competing services – "horizontal interoperability" – or the interconnection of complementary services – "vertical interoperability"), but also based on the degree of interoperability desired (from a

¹⁸ Shedding light on... n° 2 – Mobile applications: what are the security issues for their distribution outside OS stores? (https://www.peren.gouv.fr/en/actualites/2022-02-18_eclairage_sur_os/).

simple opening of programming interfaces – an API providing interconnection – to the implementation of a protocol or common standard).

In addition to setting levels of interoperability, the technical solutions provided for its implementation, and their strengths, are analysed using a grid of the possible objectives: facilitating data migration between competing services, facilitating the simultaneous connection of users to several platforms (multihoming), and enabling the interconnection of complementary services. The limitations and risks identified for each technical solution provided are also detailed.

An appendix is included, setting out these ideas and concepts from a social media perspective, a sector in which interoperability is often considered particularly lacking. The study underscores the fact that the vast differences between platforms in the sector (for example, centred on textual content or conversely on images, allowing for the publication of content that is permanent or produced on the basis of time-limited messages) and the quantity of personal data involved make the possibility of introducing broad and comprehensive interoperability much more difficult. The high potential for differentiation and innovation in this sector should also be factored in to avoid excessively inflexible restrictions being imposed on future emerging players.

This analysis was published in October 2021¹⁹ as part of the launch of PEReN's online series "Shedding light on...", which details technical points of analysis on topics relating to digital platform regulation.

¹⁹ Shedding light on... n° 1 Interoperability (https://www.peren.gouv.fr/en/actualites/2021-10-08_eclairage_sur_interoperabilite/)

Preparing and supporting the definition of regulations

Our six projects in 2021

Analysis of content recommender algorithms

At the request of the Ministry for Culture, PEReN took stock of the possible methods to assess content recommender algorithms (a summary of the study is available here in French only: (<https://www.peren.gouv.fr/actualites/publication-etude-methodologie-audit-algorithmes-dgmic/>)).

Security issues arising from opening application stores

As part of the draft EU legislation the DMA, PEReN carried out, on behalf of the Ministry for the Economy, Finance and Industrial and Digital Sovereignty, technical analysis of the security issues arising from opening operating systems to third-party application stores (a summary of the study is available here: https://www.peren.gouv.fr/en/actualites/2022-02-18_eclairage_sur_os/).

Technical insight into the interoperability of online services

In partnership with INRIA, PEReN produced an analysis on interoperability (features, scope, interconnection tools) as part of the Inter-Administration Taskforce on the DMA and DSA (a summary of the study is available here: https://www.peren.gouv.fr/en/actualites/2021-10-08_eclairage_sur_interoperabilite/).

EU digital regulation

PEReN provided technical support to teams from the Ministry for the Economy, Finance and Industrial and Digital Sovereignty overseeing the negotiations on draft EU legislation on digital regulation, namely the DMA and DSA.

EU harmonisation of AI regulation

PEReN offered technical assistance to teams from the Ministry for the Economy, Finance and Industrial and Digital Sovereignty in establishing the French position on the draft EU regulation on AI.

Combating terrorist content online – the Christchurch Call and the GIFCT

At the request of the Ministry for Europe and Foreign Affairs, PEReN represented the French authorities in plotting the Christchurch Call roadmap on algorithm assessment. PEReN was also a representative in a similar capacity within the technical group of the Global Internet Forum to Counter Terrorism (GIFCT), assuming the role of governmental organisation coordinator.

Center of Expertise for Digital Platform Regulation – PEReN

120 rue de Bercy – 75012 Paris | www.peren.gouv.fr | contact.peren@finances.gouv.fr

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