



Digitalisation and digital transformation in France

Implications for persons with disabilities

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Implications for persons with disabilities

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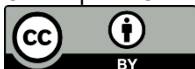
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Table of contents

1	Executive summary	6
2	Are government strategies and plans on digitalisation and digital transformation disability-inclusive?	9
2.1	Disability inclusion in generic strategies on digitalisation and digital transformation	9
2.2	Disability inclusion in focused or sector-specific strategies on digitalisation and digital transformation	14
3	Do disability strategies address the potential of and challenges pertaining to digitalisation and digital transformation?	20
3.1	How digitalisation and digital transformation are addressed in the national disability strategy	20
3.2	How digitalisation and digital transformation are addressed in specific disability-related strategies	22
4	Promoting disability inclusion through funding, education and training	25
4.1	How funding promotes disability-inclusive digitalisation and digital transformation	25
4.2	How disability inclusion is promoted through the education and training of digital professionals	26
4.3	How digital inclusion and accessibility is addressed in the education and training of accessibility and inclusion professionals	26
4.4	How digital inclusion is addressed via the training of people with disabilities	27
4.5	The most significant opportunities presented by digitalisation and digital transformation for persons with disabilities	28
5	The most significant challenges faced by persons with disabilities in relation to digitalisation and digital transformation	29
6	Conclusions and recommendations	36
6.1	Conclusions	36
6.2	Recommendations	36

1 Executive summary

The French national strategies for digitalisation have translated mainly into investment in infrastructure and a legal framework aimed at ensuring overall access to and accessibility of digitalised information, which is the main issue at stake as regards the economic, educational, citizenship-related and social challenges. However, the national strategies also focus on other barriers that vulnerable people may face in the use of digital technology as regards their skills, and aim to empower the whole population in the use of digital technology through human mediation and training; the Government is committed to fighting digital illiteracy.

The digital strategies rely on the evaluation of the direct and indirect benefits and costs of digital autonomy, on innovation and on European funds, which are used mostly for infrastructure and which are distributed unequally throughout the country as regards the amounts raised and their use.¹ The report on inclusive digitalisation highlights the role of a combination of regional and European funds to ensure access to digital technology, as illustrated by e-education and e-inclusion projects.² In 2017, the Government allocated EUR 8 million to fund innovative projects and to foster digital accessibility for those with disabilities, focusing on interfaces and on the form of digitalised information.

The information accessibility requirement, as transposed in the Digital Republic Law, is aimed at, among other things, making the digitalised information that organisations provide to the general public disability-accessible, and focusing on ways to do so. It is seen by some representatives of persons with disabilities as limited by the potential for exemptions,³ and inequalities in access to health and social services remain.⁴ France nonetheless refers to the European Directive on Accessibility Requirements for Products and Services, and to international standards. However, in addition to the allocation of resources to foster overall mediation and empowerment in the use of digital technology and the legal framework for the accessibility of digital information, the choice to develop measures to ensure the disability accessibility of and access to digital technology is also reflected in studies carried out by organisations in charge of analysing users' needs, such as the National Digital Council (Conseil national du numérique – CNum).⁵

The report on the National Strategy for Digital Inclusion also points out that digitalisation can be helpful to compensate for impairment, while the measures

¹ Report produced for the Secretary of State for Digital Affairs, 'Chapitre 3 – Constat Partagés' (shared evaluation on digital inclusion), *Rapport et recommandations, Stratégie nationale pour un numérique inclusif (Report and recommendations, National strategy for an inclusive digitalisation)*, May 2018, <https://rapport-inclusion.societenumerique.gouv.fr/4-Chapitre-3/constats/>.

² Report produced for the Secretary of State for Digital Affairs, *Rapport et recommandations, Stratégie nationale pour un numérique inclusif (Report and recommendations, National strategy for an inclusive digitalisation)*, May 2018, full report available at: <https://rapport-inclusion.societenumerique.gouv.fr/>.

³ Ombudsman (2019), 'Le CNum appelle le Gouvernement français à intensifier ses efforts en matière d'accessibilité des services numériques' (CNum asks the French Government to step up its efforts to address the accessibility of digital services), <https://cnumerique.fr/avis-accessibilite>.

⁴ Ombudsman (2019), *Dématérialisation et inégalités d'accès aux services publics (Report on digitalisation and unequal access to public services)*, <https://www.defenseurdesdroits.fr/fr/rapports/2019/01/demataterialisation-et-inegalites-dacces-aux-services-publics>.

⁵ Conseil National du Numérique – see <https://cnumerique.fr/index.php/>.

developed or planned are considered a vector for professional, educational, cultural and social inclusion. More specifically, the French Government invests a lot in the opportunities offered by digital technology to make school more disability inclusive as part of its general digital strategy for education: exchange information about courses and needs; develop adapted i-resources and frameworks for teaching; and use digital technology as a pedagogical medium making it possible for pupils to access knowledge. The strategy takes into account access to digital tools by teachers and pupils. Nevertheless, the complexity of the i-resources for teaching offered by designers generates some barriers to their use. The lack of accommodation skills among the different actors in the value chain, from the design of information to the design of the media used to deal with it, may remain a barrier to adapted digitalisation.⁶ It can also be observed that teachers lack quality training in the use of digital tools.

The national disability strategy relies on the role that digital technology can play in terms of empowerment, especially for employment and as an opportunity to use and enhance specific knowledge, for example in the field of computer science.

According to the 2005 Law on equal rights and opportunities, participation and citizenship of persons with disabilities (Law 2005-102),⁷ the accessibility of new technologies is a right and also an opportunity to facilitate access to individuals' rights linked with the accessibility of information and civil services. According to the Inter-Ministerial Committee for Disability,⁸ this opportunity extends to access to citizenship, political life, employment and education, as well as to an overall approach of disabled 'life projects' thanks to the exchanges of information it makes possible. For example, school inclusion is promoted by the 'inclusive school career digital booklet', and social inclusion by an app called 'free access' or by 'handiguide'.

With this in mind, the Inter-Ministerial Committee for Disability made proposals to support the accessibility of digital technology, such as cooperation between stakeholders that may contribute to its accessibility, including those in charge of the design and creation of digital tools, and organisations representing persons with disabilities.

Representatives of persons with disabilities have noted the increasing number of children and young adults with disabilities who have been educated in mainstream schools and universities, while digital transformation has been implemented and used to accommodate pedagogical mediation; that is to say, the way of making knowledge accessible. However, many barriers to the disability-related accessibility of digitalised services and goods still exist, mainly linked with the interface and format of digitalised information, which seems to be due to the lack of training of designers and producers of goods and services at different stages and to the lack of an overall approach to the accessibility of goods and services combining the way the information is organised and the accessibility of the media.

⁶ CNum, L'accessibilité numérique, entre nécessité et opportunité: Une obligation légale vis-à-vis des citoyens, Un levier stratégique pour les acteurs (Digital accessibility, between necessity and opportunity: a strategic issue and a legal duty), <https://cnummerique.fr/nos-travaux/accessibilite-numerique-entre-necessite-et-opportunite>.

⁷ Law 2005-102 on equal rights and opportunities, participation and citizenship of persons with disabilities (Loi n° 2005-102 du 11 février 2005 pour l'égalité des droits et des chances, la participation et la citoyenneté des personnes handicapées), 11 February 2005, <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT00000809647/>.

⁸ See <https://handicap.gouv.fr/le-secretariat-d-etat/acteurs/comite-interministeriel-du-handicap-ci/h/>.

Some good practices related to the way the organisation is organised can be noted, such as

- support and human mediation in the use of digital tools;
- supporting the training and empowerment of persons with disabilities to make them actors of digitalisation; and
- the process of adapting resources for teaching to needs, which relies on pedagogical and technical accommodations of both the content and the platform; that is to say, on cognitive accessibility and technical accessibility of knowledge and of material.

Recommendations

In light of the remaining user skills gap on the one hand, and the agreed need to take into consideration disability-related accessibility at every stage of the design of goods and services in a holistic approach on the other hand, we would recommend:

- continuing the strategy of digital mediation and training of persons with disabilities as a lever to provide persons with disabilities with autonomy in the use of digital technology, as part of a cooperative framework at a local level;
- at a legal level, transposing accessibility requirements to all the services and goods subject to digitalisation and to all the stages of their production;
- enhancing the training of human mediation actors (especially teachers) in the use of digital technology and providing accessibility training for the designers of products and services, digital mediation tools and equipment;
- establishing a framework for cooperation between representatives of disabled persons, designers of services and goods and digital professionals at a national level;
- carrying out a representative survey about the difficulties and needs of persons with disabilities in the access to digitalised services and products.

2 Are government strategies and plans on digitalisation and digital transformation disability-inclusive?

2.1 Disability inclusion in generic strategies on digitalisation and digital transformation

The national digitalisation strategies, as revealed by an analysis of the European investment strategy,⁹ on which the French investment strategy is based – the legal framework for the accessibility of digital information;¹⁰ a report on the national strategy for inclusive digitalisation;¹¹ and a national plan for inclusive digitalisation¹² – target the overall accessibility of digital technology as regards the issue of access to information. They rely on infrastructures; on the digital transition of actors in the economy, society and public service; on the form of digitalised information, making it accessible; on respect for citizens' rights; and on providing support to the population in the use of digital tools to access information.

Within the framework of its general investment strategy and the European investment strategy, the French Government identified three target sectors in which digital information should be a priority. In its report entitled *Three target sectors for a European investment strategy*, it underscores the lack of public investment in communication tools in Europe, which account for 5 % of total investment. It refers to the Digital Strategy for Europe and targets the development of very high-speed and ultra-high-speed broadband and mobile networks; the funds necessary to provide 100 % of the country with very high-speed broadband by 2022 were estimated at EUR 20 billion. As far as investment in digital strategy is concerned, it sets out the criteria for the selection of projects.

These should consider the actual socio-economic benefits in comparison with the cost of projects, taking into consideration the future cost of maintenance. The Government created a Secretary of State for Digital Affairs to assess digitalisation projects based on these criteria.

The Prime Minister published a report on the digital government strategy in 2015,¹³ and the Digital Republic Law was passed in 2016. In the Government strategy, digital technology is viewed as a vector for socio-economic benefits: it is considered as a factor of competitiveness for companies and of peoples' access to employment. But it also takes into account the rights of people in terms of data protection, as well as in terms of access to digital information and tools. Indeed, the report on the digital government strategy addresses the support provided to companies and to the population to adopt digital technology in their respective roles.

⁹ Janin, Lionel and Douillard, Pierre (2014) *Trois secteurs stratégiques pour un investissement européen (Three target sectors for a European investment strategy)*, <https://www.strategie.gouv.fr/publications/trois-secteurs-cibles-une-strategie-europeenne-dinvestissement>.

¹⁰ Law 2016-1321 for a Digital Republic (*Loi n° 2016-1321 du 7 octobre 2016 pour une République numérique*), 7 October 2016, <https://www.legifrance.gouv.fr/loda/id/JORFTEXT000033202746/>.

¹¹ Report produced for the Secretary of State for Digital Affairs, May 2018.

¹² Secretary of State for Digital Affairs, *Pour une France connectée, Plan national pour un numérique inclusif (For a connected France: National plan for inclusive digitalisation)*, press kit, 13 September 2018, p. 18, <https://societenumerique.gouv.fr/plannational/>.

¹³ Prime Minister (2015), *Stratégie numérique du gouvernement (Government digital strategy)*, <https://www.gouvernement.fr/partage/4492-strategie-numerique-du-gouvernement>.

The spirit of the law consists in 'prepar(ing)' the country for the digital transformation and for the 'economy of tomorrow',¹⁴ by establishing a framework for innovation and for the development of a digital economy and of a digital society that respects citizen's rights and ensures the access of all citizens to the opportunities digitalisation offers; the law addresses infrastructure, but also the information that should be accessible to users and consumers of goods and services, the legal framework for the exchange of information between users and consumers and the media (between infrastructures and users) ensuring the accessibility of digital information.

A report on the National Strategy for Inclusive Digitalisation, based on input provided by actors working in contact with people facing difficulties (solidarity organisations, civil servants, local councillors etc.) via a consultation platform, 25 local workshops and interviews with different stakeholders, highlighted that vulnerable people have difficulties in adopting new technologies. More generally, the authors report on the barriers brought about by the dematerialisation of services for illiterate people, persons with disabilities, adults without legal capacity etc.¹⁵

Two sections of the Digital Republic Law address the disability issue within the framework of information accessibility. They target the form (channel: written/spoken, language) of communication media (telephone, internet...) and of digital information offered to users and consumers by public and private organisations within the scope of their activities.

The ways in which they address the disability issue include the possibility of deaf and aphasic people being able to access simultaneous translation during phone communications and the possibility of persons with disabilities being able to access public information provided through internet websites. Translation services offering access to phone media and to public phone information have to be provided by phone operators, public organisations, civil service organisations and private companies whose dimensions are specified by decree within the scope of the service or goods they provide (section 1 of the Law); the accessibility of the information provided by organisations must be ensured by public organisations, civil service organisations and private companies whose dimensions are specified by decree (section 2 of the Law).

Part of section 1, on the accessibility of information provided by the public sector, as well as section 2 of the Digital Republic Law, along with the Law on the freedom to choose one's professional future,¹⁶ which complements the Digital Republic Law, introduced changes in the Law on equal rights and opportunities, participation and citizenship of persons with disabilities. As far as simultaneous translation is concerned, the law targets the operationalisation and management of accessibility services, and is aimed at making it possible for deaf people to access translation services from French sign language to spoken French language, written transcript or cued speech. Section 2 addresses the accessibility of digital information directed at public and private service recipients that is disseminated by public organisations, civil service organisations, organisations serving the public interest and some private companies

¹⁴ Ministry of Economy and Finance – see <https://www.economie.gouv.fr/republique-numerique#>.

¹⁵ Report produced for the Secretary of State for Digital Affairs, May 2018 <https://rapport-inclusion.societenumerique.gouv.fr/>.

¹⁶ Law 2018-771 on the freedom to choose one's professional future (*Loi n° 2018-771 pour la liberté de choisir son avenir professionnel*), 5 September 2018, <https://www.legifrance.gouv.fr/loda/id/JORFTEXT000037367660/>.

Accessibility encompasses all types of digitalised information addressed to the general public, regardless of the medium used, including internet websites, mobile applications, software packages and digital urban tools. However, accommodations, which are the responsibility of the information providers, may be limited by the possibility of exempting some content from accessibility requirements; by invoking the notion of 'disproportionate cost'; and by the size criteria for private organisations with an obligation to make public online information accessible. These limitations are mentioned in the Law on the freedom to choose one's professional future, and further clarified in a decree.¹⁷ However, the European directives relating to the accessibility of public websites and public sector applications have been transposed.

The Digital Republic Law specifies the timeframe within which accessibility must be implemented:

- five years maximum after the promulgation of the law as regards communication media and information provided by public organisations by phone;
- two years maximum after the promulgation of the law as regards information provided by private companies by phone;
- three years maximum as regards online information provided by public organisations, civil service organisations and companies.

The law also provides for the skills development of professionals in charge of communication services in order to make these accommodations possible. It does not specify the skills in question.

As for the impact of the digital strategy on persons with disabilities, the accessibility of information provided by organisations, which is addressed in the Digital Republic Law, is linked with the equality of rights of users and consumers of goods and services, for example the right to the appropriate fulfilment of a contract. It is also linked with the right to employment, in so far as measures targeting the accessibility of information include the accommodation of digital tools and software used by civil servants with disabilities.

- The Secretary of State for Digital Affairs published a report on the benefits of digital autonomy, which focuses mainly on access to digital technology for the general population.¹⁸ However, the authors quantitatively evaluated the direct benefits of mastering digital tools and examined the risks of digital exclusion and the effects of support for simple use of the internet. Regarding the fields in which digital technologies can bring benefits, which is the purpose of the strategy, and the type of people at risk, the report on the benefits of digital autonomy identified

¹⁷ Decree 2019-768 on the accessibility of public online communication services (*Décret n° 2019-768 du 24 juillet 2019 relatif à l'accessibilité aux personnes handicapées des services de communication au public en ligne*), 24 July 2019, <https://www.legifrance.gouv.fr/loda/id/JORFTEXT000038811937/https://www.legifrance.gouv.fr/loda/id/JORFTEXT000038811937/>.

¹⁸ Secretary of State for Digital Affairs, *Les bénéfices d'une meilleure autonomie numérique (Benefits of better digital autonomy)*, July 2018, https://www.strategie.gouv.fr/publications?keys=strat%C3%A9gie&term_node_tid_depth_join_2=All&term_node_tid_depth_join_3=8458&field_auteurs_target_id=All&field_date_de_publication_value_%5Bvalue%5D%5Byear%5D=&field_date_de_publication_value_1%5Bvalue%5D%5Bmonth%5D=&term_node_tid_depth_join=All.

four areas in which digital autonomy and the development of an accessibility strategy for digitalisation should bring empowerment:

- Digital economy: e-business, solidarity economy;
- Employment and education;
- Relationship with civil services;
- Social inclusion and wellbeing.

It also takes into consideration the risks linked to the use of the internet as regards potential addiction or harmful use by minors.

The authors of the report on the benefits of digital autonomy consider persons with disabilities as a group who should take advantage of the internet in particular to develop social links. As far as persons with disabilities are concerned, the report on the National Strategy for Inclusive Digitalisation underscores that digitalisation can be helpful in compensating for impairment, and the Government has developed a strategy for the development of technical devices and platforms as a vector for professional, educational, cultural and social inclusion.

Within the scope of the duties that fall on organisations under the Digital Republic Law, the challenges pertaining to the exchange of information for persons with disabilities relate to citizenship, consumption, work and the freedom to choose one's professional future in the 2018 Law on Disability.¹⁹ In 2011, the French Government created the National Digital Council (Conseil national du numérique – CNNum)²⁰ which is in charge of studying the relationship between human beings and digital technology. It involves stakeholders representing the different fields or areas affected by the digitalisation of information (researchers, journalists, advocates, businesses, leaders) and makes it possible to take into account the opinions of non-governmental stakeholders on the opportunities, threats and challenges of digital technology including the opinions of disabled people (see section 4.5).

The main issue at stake in the digital strategy of the French Government, which will condition its success, is ensuring access to digital technology for all people in all the French territories, which involves three dimensions: accessibility of infrastructure, equipment and digital information; supporting the digitalisation of goods and services providers to make them disability-accessible; and supporting access to digital technology. As a result, the Government has been implementing a strategy to support the development of very high-speed broadband and mobile network infrastructures across the country via the National Agency for Territorial Cohesion²¹ (Agence nationale de la cohésion des territoires) on the one hand, while at the same time, it has been driving the National Plan for Inclusive Digitalisation,²² which addresses digital inclusion mainly along two strategic lines: the deployment of infrastructure enabling the accessibility of devices as a property of the device itself, and support for human mediation in the use of and access to digital tools.

¹⁹ Law 2018-771 on the freedom to choose one's professional future, 5 September 2018, <https://www.legifrance.gouv.fr/loda/id/JORFTEXT000037367660/>.

²⁰ See <https://cnnumerique.fr/le-conseil>.

²¹ See amenagement-numerique.gouv.fr/.

²² Secretary of State for Digital Affairs, *Pour une France connectée*, 13 September 2018, p. 18.

The accessibility of digital technology is a means to promote inclusion, which involves providing specific support for human mediation and the empowerment of users. Among the goals of these digitalisation strategies, the National Plan for Inclusive Digitalisation links the empowerment of people in the use of digital technology to empowerment in other areas of life, with a focus on the empowerment of end users. It seeks to:

- make digital technology a vector of access to individuals' rights (health, work etc.);
- develop citizens' digital skills;
- promote social links;
- take economic advantage of digital skills;
- prepare society to adapt to technological developments.

Digital skills are seen as a strategic goal as well as a driver for individuals' rights, citizenship, economic development and social links, requiring appropriate measures.

The measures that can be identified in the National Plan for Inclusive Digitalisation, and which form the basis of the digitalisation strategy, address mainly people facing difficulties, but also address support for workers (in the social and digital fields) and regional and local authorities, and target the empowerment of stakeholders. They include:

- support for digital autonomy;
- training of support workers;
- digital inclusion measures (organisation of places for human mediation in the use of digital tools aimed at relaying and supporting the national strategy for inclusive digital technology at the local level);
- skills evaluation tools;
- resource platforms;
- establishment of pilot territories;
- cooperation between Government, local authorities, public organisations, local public and private actors;
- launch of a national partnership in charge of implementing recommendations made stakeholders.²³

As far as the civil service is concerned, since March 2008, the Secretary of State for Digital Affairs has been in charge of the plan's implementation within the French Government. Ten people have held this position since its creation. A specialised administrative body – the Interministerial Directorate of Digital Affairs – steers the related national strategy.

Currently, the strategy is based on the 'Tech.Gouv' 2019-2022 plan, which identified six priorities, including 'inclusion' and 'simplification'.²⁴ The notion of accessibility is understood in a universal way: it not only concerns persons with disabilities but also

²³ Secretary of State for Digital Affairs, *Pour une France connectée*, 13 September 2018, p. 18.

²⁴ 'Tech.Gouv': *Stratégie et feuille de route 2019-2022 : édition actualisée mi-2020* ('Tech.Gouv' national strategy for digitalisation, updated on 31 August 2020), <https://www.numerique.gouv.fr/publications/tech-gouv-strategie-et-feuille-de-route-2019-2021/>; Prime Minister, 'Tech.Gouv, Accélérer la transformation numérique du service public' (Tech.Gouv, Accelerate the digital transformation of the civil service), https://www.numerique.gouv.fr/uploads/20200827_Plaquette_Techgouv_DINUM.pdf.

addresses territorial, social and generational divides. Accessibility of equipment, goods and services is considered from the point of view of the environment offering them, and this approach targets all the barriers limiting people's access to those things in the scope of their interactions with their environment. It is the responsibility of the environment both to design accessible infrastructure, equipment, services and goods, taking into account territorial, technical aspects and specific characteristics of people such as their age or impairment, and to support people in the use of such equipment in order that they can access goods and services.

CNNum²⁵ published a report on the challenges of digitalisation for persons with disabilities. Within the scope of interviews, CNNum has also called for recommendations from non-governmental organisations working with persons with disabilities and their families regarding adequate devices to access dematerialised services, financial help for online human mediation and training on disability for digital support workers. The organisation also established a disability taskforce and identified professionals in charge of human mediation in the use of digital technology. This will be developed in sections 4 and 5.

Examples of tools that are mentioned in the national plan: resource platforms aimed at local and regional authorities and digital support workers; a quick intervention kit aimed at support workers (social/digital); 'mirror' sites which duplicate webpages to simulate online administrative procedures while ensuring the confidentiality of data; training of social workers in the detection of difficulties linked with digital illiteracy and in adapting the support provided to the people concerned; pooling public and private resources in a fund to support digital inclusion; digital passes enabling people to receive full or partial funding for human support; and training in the use of digital tools. The plan does not target disabled people in particular – these measures are aimed at developing the 'capacities to act in a digitalised society' of all people who are facing difficulties with the use of digital tools. They are based on autonomous access to digitalised information, which determines people's access to their rights,

In conclusion, the French Government considers digitalisation a vector for the empowerment of people in general and of persons with disabilities in particular, as far as citizenship, employment, education, social life and economic life are concerned, which makes digital inclusion and digital accessibility a particular challenge requiring specific support for infrastructure and the direct or mediated use of digital tools.

2.2 Disability inclusion in focused or sector-specific strategies on digitalisation and digital transformation

Employment and education are considered as part of the main challenges to be addressed by the digitalisation of the economy and the civil service. Civil service and the development of telemedicine are sectors in which the Government has invested significantly to improve accessibility.

Digitalisation of education and schools and accessibility

²⁵ CNNum (2020), *Accessibilité numérique, entre nécessité et opportunité: Une obligation légale vis-à-vis des citoyens, Un levier stratégique pour les acteurs (Digital accessibility, between necessity and opportunity: a strategic issue and a legal duty)*, https://cnnumerique.fr/publication_rapport_accessibilite_numerique.

The French Government aims to generalise the use of digital technologies in schools,²⁶ and relies on a digital competence framework (*cadre de référence des compétences numériques* – CRCN), which is inspired by the European digital competence framework DigComp. It is aimed at providing pupils with equipment and competences in the use of digital tools, and teachers with assistance in teaching based on the use of digital technology.

A digital plan for school (*plan numérique à l'école*) was launched in 2015, which included the provision of tablets to pupils.²⁷ Different elements of the plan deal with resources that teachers can rely on to support their teaching. For example, part of the Edu-Up package of resources for teachers is aimed at supporting the production and dissemination of innovative digital content and services for teaching; one section is specifically targeted at pupils with special needs and inclusive education. The partnership for innovation and artificial intelligence (*Partenariat intelligence artificielle* – P2IA)²⁸ targets French language and mathematics and provides tools, services and assistance in pedagogical mediation to teachers in differentiated and personalised teaching. It aims to provide resources to help teachers to analyse, assess and choose teaching activities and to support pupils in their education. For example, Adaptiv'math relies on artificial intelligence and makes it possible to target each pupil's difficulties and personalise their courses.

Within the framework of the personalisation of teaching and learning, the Ministry of Education has promoted the 'Total Accès' service,²⁹ which consists of an application and a mobile site giving access to information about possible course and career choices adapted to blind people. This tool is provided by Onisep,³⁰ which is an organisation in charge of managing information about course and career choices under the control of the ministry.

Digital technology is thereby used to provide sources of information to teachers to accommodate teaching and course choices, and as a pedagogical medium whose effectiveness depends on the form (channel used), the organisation of the information and the accessibility of the media (material and infrastructure), as well as on the ability of teachers and pupils to use digital tools. The combination of pedagogical mediation and digital mediation in accommodated teaching is illustrated by the process of adaptation of resources for teaching, which relies on cooperation between specialised teachers, regular teachers and professionals in charge of the technical adaptation of resources for teaching (5.).

²⁶ See <https://www.education.gouv.fr/l-utilisation-du-numerique-l-ecole-12074><https://www.gouvernement.fr/action/l-ecole-numerique>.

²⁷ See www.gouvernement.fr/action/l-ecole-numerique.

²⁸ See <https://primabord.eduscol.education.fr/P2IA>.

²⁹ See <https://www.education.gouv.fr/total-acces-l-orientation-sur-smartphone-accessible-tous-11015>.

³⁰ National Office for Information on Course and Occupational Choices (Office national d'information sur les enseignements et les professions – ONISEP), <https://www.onisep.fr/>.

In addition to the disability issue, following a 2010 report by the General Inspectorate of the Administration of National Education and Research,³¹ CNum³² emphasised the complexity of the format of resources for teaching, which was a barrier to their general accessibility. The authors recommended addressing this through two strategic lines: interoperability of resources and accessibility for children with disabilities. Inclusive schooling faces the double challenge of pedagogical mediation, making knowledge itself accessible as regards its organisation and its form, and technical mediation.

As far as tertiary education is concerned, a law on the organisation of tertiary education and research requires universities to tackle the issue of accessibility in general.³³ In 2009, the ministry developed a *General accessibility guide*, which addresses the following issues: material accessibility, know-how pertaining to the use of digital technologies and the scientific value of accessible resources.³⁴ In 2013, the French Government also launched the Digital Strategy for Tertiary Education and Research, aimed not only at making university more attractive and more open to the rest of the world but at supporting students' success and empowerment. The ministry highlighted the opportunities offered by digital technology to diversify learning methods and teaching approaches and services, and to make knowledge accessible as regards the diversity of student profiles. It noted that, for example, the mix of distance learning and classroom teaching was linked with a much higher success rate at the University of Bordeaux.³⁵ In conclusion, digital technology is considered to be an opportunity to diversify teaching methods and approaches, as a source of information for this diversification and as a pedagogical medium.

Digitalisation in the field of economy and employment policies

Within the framework of its digital strategy, the Government views digitalisation as an opportunity for the economy. Data, which is the basis of information, is considered as the future raw material for targeting consumers' needs, simplifying and improving processes and promoting new products and services. The importance of the issue requires building new skills within companies, which may involve building a new culture, and support may be needed in the digital transition.³⁶

In 2018, the Government created a platform called France Num,³⁷ which provides information about all the actions that are carried out by the state, and by local and regional authorities and their partners, to support the digitalisation of small and medium-sized companies. Among other things, it provides information about technical

³¹ Inspection General of the Administration of National Education and Research (Inspection générale de l'administration de l'Education nationale et de la recherche), *Le manuel scolaire à l'heure du numérique: une nouvelle donne de la politique des ressources pour l'enseignement* (The school handbook in the digital era), July 2010, <https://www.education.gouv.fr/le-manuel-scolaire-l-heure-du-numerique-1310>.

³² CNum (2020), *Accessibilité numérique*.

³³ Law 2013-660 on tertiary education and research, 22 July 2013, <https://www.legifrance.gouv.fr/loda/id/JORFTEXT000027735009/>.

³⁴ CPU, *Guide méthodologique de l'université numérique (General accessibility guide)*, January 2009, <http://www.cpu.fr/publication/guide-methodologique-de-luniversite-numerique/>.

³⁵ See <https://www.enseignementsup-recherche.gouv.fr/cid89439/le-numerique-service-une-universite-performante-innovante-ouverte-sur-monde.html#numerique-insertion-etudiants>.

³⁶ See <https://www.economie.gouv.fr/entreprises/transformation-numerique-TPE-PME>.

³⁷ See <https://www.francenum.gouv.fr/>.

support companies in the region and about financial support offered to companies by local and regional authorities to aid their digital transformation.

In 2018, France Num set the goal of making it possible for small and medium-sized companies to rise to the challenge of digitalisation within a three-year timeframe. In the Occitanie region (in the south-east of France), the National Union of Adapted Companies (Union nationale des entreprises adaptées – UNEA),³⁸ an NGO made up of adapted companies (*entreprises adaptées*),³⁹ launched an action plan entitled *Action for the development of employment and skills (Action de développement des emplois et compétences – ADEC)* to support such companies in their digitalisation process. The plan is financially supported by UNEA as well as the Regional Directorate for Economy, Employment, Work and Solidarity (Direction régionale de l'économie, de l'emploi, du travail et de la solidarité – DREETS).

UNEA pointed out that adapted companies had been forced to re-organise in the light of the health situation due to COVID-19. Reorganisation has affected business relationships and human relationships, and has led to the 'establishment of business platforms for communication, using digital tools and social networks aimed at all employees, and fragile persons, persons with disabilities, remote workers and part-time workers in particular'. UNEA considers this situation an opportunity for adapted companies⁴⁰ to adopt a 'digital culture' in order to 'be part of these socio-economical transformations' and to leverage the competitive advantage of digital transformation. The goal is to empower people working in these companies and create new employment opportunities for persons with disabilities. With this in mind, the ADEC package is aimed at supporting intervention by consultants in the process of digitalisation of adapted companies.

The support needs that are highlighted in the general digitalisation strategy have led the French Government to consider the need to train professionals, not only social workers to support disabled people in the use of digital tools, but professionals in charge of human mediation in the use of digital technology on the issue of disability and impairments.

Moreover, in order to build on the digitalisation process to develop employment opportunities, the French Government offers companies the possibility of assessing their digital skills needs while also offering them the opportunity to leverage the skills of persons with disabilities (enhancing the skills of persons with disabilities is part of the disability policy).

Within the framework of its inclusive digitalisation policy, the Government carries out specific actions on the digitalisation of public services, which is seen as a vector for economic development and access to rights. As part of the Government's economic recovery plan (*Plan de relance*), the Ministry of Transformation and the Civil Service

³⁸ See <https://www.unea.fr/accompagner-les-entreprises-adaptees-dans-leur-digitalisation>.

³⁹ Adapted companies are bound to the ordinary labour market law, but 80 % of their employees are persons with disabilities, see <https://travail-emploi.gouv.fr/emploi/emploi-et-handicap/article/emploi-et-handicap-les-entreprises-adaptees-les-centres-de-distribution-de>; Article L5213-13 L5213-19 of the Labour Code, <https://www.legifrance.gouv.fr/affichCode.do?idSectionTA=LEGISCTA000006195890&cidTexte=LEGITEXT000006072050>.

⁴⁰ 'Adapted companies' in France are companies supported and funded by the state that offer secure jobs for people with disabilities.

(Ministère de la transformation et de la fonction publiques) supports projects to foster economic development and inclusive digitalisation driven by public administrations.⁴¹ In a context in which France ranks poorly in terms of the accessibility of online public services (see section 5.2), a section of the economic recovery plan is devoted to the digitalisation of the state and of the local and regional authorities and addresses the dematerialisation of administrative procedures, which is seen as a way to achieve individual rights, and the support needed to make it possible for public organisations to face the challenges of digitalisation. However, this strategy does not address the disability issue; this issue is addressed by the disability strategy and will be developed within the context of public services (see section 3).

Digitalisation in health and social services

Digital inequalities are considered to be an important factor of social exclusion. These inequalities are driven by social, health, territorial and generational factors.⁴² According to the 2018 digital barometer published by the Centre for Research and Documentation (Centre de recherche et de documentation – Crédoc), which is one of the main private research institutes in France, 36 % of respondents (18 million people by extrapolation) reported their ‘concern’ and ‘feeling of computer incompetence’ when faced with an online administrative site, while 12 % (7 million) were not internet users.⁴³

In January 2019, the Ombudsman warned of the effects of digital illiteracy as a factor leading to the aggravation of social inequalities, and recommended that efforts be undertaken to address this issue.⁴⁴ A 2016 survey of social action services highlighted a lack of digital strategy among social services and administrations, and a lack of sufficient training for public servants and social workers on digital issues.⁴⁵

Various developments are now integrating the digital issue into social and health policies. Digital technology is used as a facilitator to ensure access to the law with the support of human mediation in the use of digital technology.

Since 15 September 2018, telemedicine has entered the common law and its provision is reimbursed by French health insurance. Any doctor is supposed to be able to offer their patients a digital consultation. This possibility has gradually been generalised to cover all health services. During the health crisis of 2020, those possibilities were extended to professionals from the rehabilitation sector (e.g. speech therapy) and it became possible to offer fully digital medical care.⁴⁶

⁴¹ See <https://france-relance.transformation.gouv.fr/>.

⁴² National Inequalities Observatory (Observatoire des inégalités), *National Report 2020*, www.inegalites.fr.

⁴³ Ministry of Economy and Finance (2018), ‘*Baromètre du numérique*’ (*Digital barometer*), https://www.arcep.fr/uploads/tx_gspublication/barometre-du-numerique-2018_031218.pdf.

⁴⁴ Ombudsman (2019), *Dématérialisation et inégalités d'accès aux services publics*.

⁴⁵ Ombudsman (2016), *Le numérique au sein de l'Action sociale dans un contexte de dématérialisation* (*Study on digitalisation in the field of social policies*), https://www.inclusion-numerique.fr/wp-content/uploads/2016/04/%C3%89tude_Le-num%C3%A9rique-au-sein-de-l'Action-Sociale-dans-un-contexte-de-d%C3%A9mat%C3%A9rialisation.pdf.

⁴⁶ Decree of 25 March 2020 on measures for the organisation and the operation of the health system in the context of a health emergency (*Arrêté du 25 mars 2020 complétant l'arrêté du 23 mars 2020 prescrivant les mesures d'organisation et de fonctionnement du système de santé nécessaires pour faire face à l'épidémie de covid-19 dans le cadre de l'état d'urgence sanitaire*), <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000041755801&dateTexte=20200421>.

For isolated people or people with disability with poor access to transportation, this made possible secure and continuous access to medical care.

Since 2016, the law has required each department to develop a local strategy for improving the accessibility of public services (France is divided into 100 departments, which are a territorial administrative level).⁴⁷ However, there has been a significant delay in the development of these projects. Only 40 departments had implemented this strategy by the beginning of 2019, and few new plans have been adopted since then because of the health crisis. Nevertheless, all of these plans include a digital axis.

Since 2019, the High Council of Social Work (Haut Conseil du travail social) and the Ministry of Solidarity (Ministère des solidarités) have published strategic guidelines and good practice recommendations as well as studies on digital technology and artificial intelligence in social work.⁴⁸ Those guidelines highlight the opportunity for an integrated strategy for digital social work for people with disability, especially regarding better access to resources and improved comfort and autonomy in everyday life.

⁴⁷ Law on territorial organisation (*Loi n° 2015-991 du 7 août 2015 portant nouvelle organisation territoriale de la République*), 7 August 2015, <https://www.legifrance.gouv.fr/loda/id/JORFTEXT000030985460/>.

⁴⁸ National High Council of Social Work, *report and recommendation for digitalisation of social work pourquoi et comment les travailleurs sociaux se saisissent des outils numériques.pdf* (solidarites-sante.gouv.fr) and *for the use of artificial intelligence in social work Travail social et intelligence artificielle - Ministère des Solidarités et de la Santé* (solidarites-sante.gouv.fr).

3 Do disability strategies address the potential of and challenges pertaining to digitalisation and digital transformation?

3.1 How digitalisation and digital transformation are addressed in the national disability strategy

Access to new technologies is addressed in the national disability strategy as a right and is considered an opportunity to promote access to other rights as it is interlinked with the accessibility of information and services for persons with disabilities.

The Law on Equal Rights and Opportunities, Participation and Citizenship for Persons with Disabilities (Law 2005-102) includes a section on accessibility.⁴⁹ It is divided into three chapters corresponding to the issues at stake: education (chapter 1); employment (chapter 2); and housing, transportation and new technologies (chapter 3). Section 2 of the Digital Republic Law, which addresses the rights of persons with disabilities relating to public online information, was transposed into Article 47 of Law 2005-102 under the chapter on housing, transport and new technologies. More generally, France has ratified the UN Convention on the Rights of Persons with Disabilities (UNCRPD), which guarantees the accessibility of information, communication systems and communication technologies.

Decree 2019-768 on the accessibility⁵⁰ (1.) of public online communication services mentions Article 6 of European Directive 2016/2102 relating to the accessibility of internet sites and mobile applications of public organisations, as well as the fact that for other online communication services providing public information, the reference framework is based on international standards.

It also specifies the annual revenue thresholds above which private organisations have to make public online information disability-accessible. It contains a list of exempted contents and clarifies the notion of 'disproportionate cost', which is evaluated and monitored on the basis of organisations' resources and based on an assessment of the advantages they provide to persons with disabilities.

It also specifies how the technical conditions for accessibility are decided by the ministry responsible for persons with disabilities and the ministry in charge of digital technology. This decree has nevertheless been criticised by associations working in the disability sector, which believe that it makes it too easy for organisations to delay their implementation of accessibility objectives.

In order to facilitate the implementation of disability accessibility for digital technology, in particular Article 47 of Law 2005-102 and Decree 2019-768, the Interministerial Directorate of Digital Affairs⁵¹ (Direction interministérielle du numérique – DINUM; formerly the interministerial directorate for digital technology and information and communication systems, direction interministérielle du numérique et du système d'information et de communication de l'État – DINSIC), which is in charge of the digital

⁴⁹ Law 2005-102 on equal rights and opportunities, participation and citizenship of persons with disabilities, 11 February 2005.

⁵⁰ Decree 2019-768 on the accessibility of public online communication services, 24 July 2019, <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000038811937&fastPos=1&fastReqId=1742529546&categorieLien=id&oldAction=rechTexte>.

⁵¹ See <https://www.numerique.gouv.fr/dinum/>.

transformation of the state in particular, has been publishing different versions of the *General frame of Reference for the Improvement of Accessibility for Persons with Disabilities (Référentiel général d'amélioration de l'accessibilité – RGAA)*⁵² since 2009.

The Inter-Ministerial Committee for Disability (Comité interministériel du handicap – CIH), which was created in 2009, is in charge of defining, coordinating and evaluating the policies of the Government aimed at persons with disabilities. It meets regularly in order to define priority actions and objectives.

It specifically included the digital accessibility of public services in its five-year goals in its 2017 and 2018 press kits.⁵³ On 14 May 2021, DINUM announced that the proportion of online civil services that had realised an audit of their accessibility and consequently declared their accessibility had increased from 26 % to 57 % in three months.⁵⁴ Digital accessibility is considered more generally as a means of compensating for the limitations caused by impairment, as mentioned during the 2018-2019 National Conference on Disability (*Conférence Nationale du Handicap*),⁵⁵ and as a lever to achieve access to individual rights, social life and education (press kit 2018).

In its 2020 press kit, the CIH announced the launch of a digital platform called 'My Disability Pathway' (*Mon parcours handicap*), aimed primarily at facilitating access to employment and education.⁵⁶ The platform was launched in May 2020. In a press release relating to the 2018-2019 National Conference on Disability,⁵⁷ which presented the workshop outcomes, the CIH also mentioned the Government's plans to improve the access of persons with disabilities to technical and digital devices. In 2020, a national research programme for technical innovation dedicated to everyday living and autonomy called 'Staying Independent' (*Maintien en autonomie*) was launched to support communication, learning, moving and living at home.⁵⁸

In its 2020 press kit, the CIH announced that actions were planned to be launched in early 2021. Digitalisation is also seen as a means to avoid the disruption of career or educational pathways, making it possible to connect persons with disabilities, their families and professionals who play a role in the life projects of persons with disabilities, whether directly or indirectly. Examples of such connection are illustrated by the creation of a hotline aimed at meeting the needs of persons with disabilities and their families; by the creation of an FAQ section on the handicap.gouv.fr website; by the existing section dedicated to disability on the gouvernement.fr website, which is intended for all persons affected by disabilities; and by the periodic videoconferencing

⁵² See <https://www.numerique.gouv.fr/publications/rgaa-accessibilite/obligations/>.

⁵³ Press kit dated 20 September 2017, <https://handicap.gouv.fr/presse/dossiers-de-presse/?annee=2017#articles>; Press kit dated 25 October 2018, <https://handicap.gouv.fr/presse/dossiers-de-presse/article/comite-interministeriel-du-handicap-du-25-octobre-2018>.

⁵⁴ See <https://www.numerique.gouv.fr/espace-presse/le-gouvernement-accelere-la-numerisation-des-services-publics-avec-7-nouvelles-demarches-disponibles-en-ligne/>.

⁵⁵ Press kit dated 3 December 2018, <https://handicap.gouv.fr/presse/dossiers-de-presse/article/conference-nationale-du-handicap-2018-2019>.

⁵⁶ See <https://handicap.gouv.fr/presse/dossiers-de-presse/article/comite-interministeriel-du-handicap-2020>.

⁵⁷ Press kit dated 12 July 2019, <https://handicap.gouv.fr/presse/communiques-de-presse/article/conference-nationale-du-handicap-2018-2019-restitution-des-5-chantiers>.

⁵⁸ Press kit dated 16 November 2020, <https://handicap.gouv.fr/presse/dossiers-de-presse/article/comite-interministeriel-du-handicap-2020>.

aimed at sharing information between regional health agencies, MDPHs, NGOs and Parliament.

The involvement of persons with disabilities is alluded to as far as disability strategies are concerned. This is highlighted in the statement made by the CIH during the National Conference on Disability 2018-2019, which emphasises the need for collaboration between the minister and representatives of persons with disabilities in different areas of life, including digitalisation.

3.2 How digitalisation and digital transformation are addressed in specific disability-related strategies

As shown previously, the access of persons with disabilities to digital technology is addressed in the Law on Disability (Law 2005-102) as a right, as well as a way to achieve individual rights. The first section addressing the rights of persons with disabilities in the Digital Republic Law (Law 2016-1321) relating to phone communication introduced amendments to the Law on Disability, resulting in Article 78 on oral and audio communication with civil service organisations. This Article relates to citizenship and social life. Access to individual rights is considered to be supported by the improvement of citizens' relationship with the civil service, and digitalisation is seen as an opportunity to improve the relationship between citizens and civil services. The accessibility of individual rights therefore depends on the accessibility of digitalised information, which also depends on the accessibility of civil service media and on support to access them.

DINUM relies on the *General Frame of Reference for the Improvement of Accessibility for Persons with Disabilities*, and the Government published a circular on its own duties regarding the accessibility of public websites and mobile applications.⁵⁹ This circular was a restatement of the duties resulting from the Digital Republic Law (2.). The CIH considered that digital technology is a lever to access administrative procedures and political rights (political campaigns, communication by the ministries). In its 2020 press kit, the CIH declared that efforts were already underway to improve the accessibility of electoral campaigns, and that it was planning to improve the audio-visual accessibility of electoral campaigns in 2020 and 2021. It announced a cooperation between the Ministry of the Interior and the National Advisory Council for Persons with Disabilities (Conseil national consultatif des personnes handicapées – CNCPH) in this area.

In order to support the inclusive role of digitalisation, the CIH made proposals⁶⁰ to create a community of professionals involved in digital accessibility and web quality in administrations; to promote innovative solutions for digital accessibility; to publish decrees making it possible to implement the Digital Republic Law; and to transpose European directives concerning the accessibility of public websites and mobile applications into French law. To illustrate the different dimensions of disability-accessibility of digital technology, the CIH recommended combining digital tools with

⁵⁹ Circular on the implementation of the obligations and commitments of the Government in terms of accessibility to people with disabilities of public websites, extranet, intranet and mobile applications, 2020 (Circulaire relative à la mise en œuvre des obligations et engagements du Gouvernement en matière d'accessibilité aux personnes en situation de handicap des sites internet, extranet, intranet et applications mobiles publics), 17 September 2020, <https://www.legifrance.gouv.fr/circulaire/id/45071>.

⁶⁰ Press kit dated 20 September 2017, <https://handicap.gouv.fr/presse/dossiers-de-presse/?annee=2017#articles>.

'easy to read and understand' (*facile à lire et à comprendre*) communication. Some websites of public organisations such as the French national funding agency for autonomy (Caisse nationale de solidarité pour l'autonomie – CNSA)⁶¹ offer information in 'easy to read and understand'.⁶² In its 2020 press kit,⁶³ the CIH announced the online launch of a digital observatory aimed at monitoring the digitalisation of administrative processes and reporting on digital accessibility. It includes points on how accessibility is addressed in the digitalisation of administrative procedures.

Concrete actions were proposed to make digitalisation effectively inclusive by mediating the use of digital technology and ensuring digital communication for deaf or aphasic persons including via written and visual simultaneous translation; some public services provided specific access for tutors acting on behalf of people without legal capacity.

In 2018, access to digital technology for persons with disabilities was also connected to their right to education and social inclusion.

As far as education is concerned, the role of digital technology in inclusion is represented by the possibility it offers to exchange information concerning the pupils and their courses and to strengthen links between children's education stakeholders, and by the opportunity it offers to teachers and children to access digital resources for teaching, which depends on training teachers and pupils in the use of digital technology.

Indeed, the CIH noted the Ministry of Education's pledge to make it possible for pupils with disabilities to request examination accommodations digitally and promoted the accessibility of the website (Parcoursup) dedicated to the choice of career and educational pathways after the French Baccalaureate. The CIH also planned the development of a digital platform intended to provide resources for teachers (2018). In its 2020 press kit, it announced that a platform offering legal, pedagogical and educational resources on disability issues had been created in 2019 (for example, resources for teachers are available on the websites of the academic directorates) and it planned to implement an 'inclusive pathway digital booklet' (*livret numérique parcours inclusif*) containing all the information about disabled children's pathways and the adjustments necessary to improve the implementation of adapted teaching throughout his/her schooling as well as the exchange of information between stakeholders in charge of child education (family, school and departmental houses for persons with disabilities (*Maisons Départementales des Personnes Handicapées – MDPH*)).⁶⁴

The booklet is expected to be piloted in September 2021 and extended generally in September 2022. In November 2020, the CNSA announced that it had already been

⁶¹ See <https://www.cnsa.fr/> and ANED report on independent living.

⁶² See, for example, <https://www.cnsa.fr/a-propos-de-la-cnsa/les-missions-de-la-caisse-nationale-de-solidarite-pour-lautonomie>.

⁶³ Press kit dated 16 November 2020, <https://handicap.gouv.fr/presse/dossiers-de-presse/article/comite-interministeriel-du-handicap-2020>.

⁶⁴ Offices working as 'single points of contact' in charge of the admission to a general status of disability and the support of disabled persons and of their relatives. There is one MDPH in each French department (equivalent to a UK county). They are responsible for organising the access to the compensation rights of disabled persons as well as **of the implementation of decisions**. See Task 2017-18 on disability assessment.

tested in four different territories in September and November 2020; that interconnections between the school system, families and MDPHs were being built; that the inclusive pathway digital booklet would be generalised across the various school jurisdictions in September 2021 and accessible online to families in 2022; and that MDPHs should also have access to it.⁶⁵ The CNSA also announced the launch of a 'school and tertiary education' section on the 'My digital pathway' (*Mon parcours handicap*) digital platform, in order to facilitate administrative processes and course choices (with no specific timescale). In 2019, as part of its plan for inclusive schooling, the Ministry of Education announced the creation of a platform called CapEcole,⁶⁶ which would make it possible for parents and teachers to find material for adapted teaching, including digital material, and documentary resources as well as technical contact points.

As for social life, digitalisation is considered a way to promote the mobility of persons with disabilities as well as their access to leisure, sport and culture. For example, in its 2020 press kit, the CIH announced the launch of a collaborative digital app called 'accès libre' (free access) aimed at making it possible to find out the level of accessibility of private and public institutions. It gives information about transportation to such places, the parking, the state and the slope of the ground, the width of doors etc. As for culture, it addresses physical access (as a spectator) as well as digital access, using media such as adapted e-books, and the digital accessibility of public spaces. The CIH announced that a survey was to be carried out on the potential to create a platform which would centralise the offer of accessible books, and on the corresponding features. In its 2020 press kit, the CIH announced the launch of a platform called 'handiguide', which has been online since 2020 and is aimed at identifying accessible local sport opportunities (in towns, regions etc.).

Digital technology is also seen as a means of supporting the employment of persons with disabilities, especially persons with autism in the fields of computer science, satellite imaging and cyberdefence, within the framework of a partnership convention that was ratified between the Ministry of Defence, the Association for the Management of Services and Institutes for Persons with Autism (Association Française de Gestion de services et établissements pour personnes autistes – AFG Autisme) and Toulouse-Midi-Pyrenées university.

Agefiph, which is in charge of collecting the tax paid by companies that do not fulfil their quota for persons with disabilities and supporting professional integration through its partners, supports carrying out a diagnosis of companies' needs in terms of digital skills that could be matched by persons with disabilities, either directly or through contracts with adapted companies and specialised workshops. Actions are carried out within the framework of a cooperation between digital company professionals and those recruited through Agefiph or the subcontractor.⁶⁷

⁶⁵ See <https://www.cnsa.fr/grands-chantiers/programme-si-commun-mdph/le-livret-parcours-inclusif>.

⁶⁶ See <https://www.capecole.org/centre-de-ressources/>.

⁶⁷ See <https://www.agefiph.fr/aides-handicap/diagnostic-numerique-handicap>.

4 Promoting disability inclusion through funding, education and training

4.1 How funding promotes disability-inclusive digitalisation and digital transformation

The report on inclusive digitalisation published by CNNum refers to European funds allocated to digitalisation, in particular the European Social Fund and the European Regional Development Fund.⁶⁸ However, the authors note that the EUR 15.5 billion allocated to France, of which EUR 9.5 billion in ESF have been administered by regional authorities, and EUR 6 billion in ERDF have been administered by regional authorities (35 %) and the state (65 %) for the 2010-2020 period, have been used mostly for infrastructure (very-high-speed broadband in particular) 'whereas enabling conditions for obtaining funds would allow them to be used for inclusion and empowerment through digital skills'. They also note that the use of funds is very unequal throughout the country (for example, EUR 20 million has been used by the Hauts-de-France region, whereas EUR 3.3 million has been used by the Provence-Alpes-Côte d'Azur (PACA) region. According to the barometer of territories published by Labterritoria, France could have obtained almost EUR 700 million in European funds between 2007 and 2013 within the scope of its cohesion policy, but the available funding was not mobilised.

The example of the Hauts-de-France region shows that projects that were funded by the region were linked with intercommunal digital road maps, externalised spaces devoted to digital services, support for the digitalisation of schools and support for digital and social innovation. The report recalls that European funds can support a maximum of 25 % of investment costs as well as operating costs in four areas: administration, inclusion, training and health.

The combination of regional and European funds makes it possible to support local representatives in charge of implementing local digitalisation road maps, as well as projects related to territorial cohesion and the sharing of good practices among all stakeholders across regions. Within the framework of inclusive digitalisation (as in other fields), projects such as e-inclusion and e-education are supported in cooperation with the relevant authorities; for example, the authorities in charge of social action.

The authors also recall that within the framework of the Digital Single Market and the allocation of ERDF funds to support the development of digital skills, it is possible to use funds for digital inclusion strategies. They point to the delay in supporting the digital skills empowerment of the population in France compared with other European countries.

The authors also highlight that the way grants are allocated and the fact that organisations involved are not necessarily eligible for such funds makes it difficult to identify relevant partners and relevant funds. They also note the gap between the amounts available and the needs, and a tendency to confuse socially useful actions with free civil service. According to them, funds that are allocated to mediation in the use of digital technology go to stakeholders with a good level of engineering first.

⁶⁸ Report produced for the Secretary of State for Digital Affairs, May 2018.

EUR 1 billion was allocated to the three-year digital plan for schools to train teachers and workers in the use of digital tools, develop accessible resources for teaching, and fund computers and tablets.⁶⁹ The National Agency for Territorial Cohesion published data on the digital pass enabling people to receive full or partial funding of human support, and training in the use of digital tools, in March 2021: EUR 22 million was allocated to digital passes in 2019 and 2020.

In 2017, the Government allocated EUR 8 million to fund innovative projects to support digital accessibility for persons with disabilities. It focused on projects targeting 'the development of new adapted control interfaces, the production, improvement or automated conversion of content in compliance with accessibility rules, or the use of technologies such as augmented reality for accessibility purposes'.⁷⁰

In its 2020 press kit, the CIH announced that EUR 10 million would be allocated to the accessibility of key ministerial speeches. This includes the improvement of digital media.

EUR 30 million was allocated to the Staying Independent project (3.) which is concerned with innovation to enhance everyday life and autonomy and targeting communication, learning, moving and staying at home.

The Digital Republic Law specifies that funds dedicated to the accessibility of organisations open to the general public can be used to support the accessibility of online public information.

4.2 How disability inclusion is promoted through the education and training of digital professionals

In its *Manifesto for an Inclusive State*, the CIH mentioned the need to train professionals from the ministries in charge of driving new information system projects.⁷¹ In its 2020 press kit, it announced the creation of the Interministerial Directorate for Digitalisation (DINUM) to support digital professionals within the ministries.

4.3 How digital inclusion and accessibility is addressed in the education and training of accessibility and inclusion professionals

In the report on inclusive digitalisation published by the Secretary of State for Digital Affairs, the sector of mediation in the use of digital technology is described as disorganised, as it is based on organisations dedicated to equipment access (digital public spaces) as well as services dedicated to support and mediation in the use of digital tools, in places that are not primarily dedicated to that function (for example, places dedicated to social action).⁷² The authors list social workers, among others, as the main stakeholders concerned.

⁶⁹ See www.gouvernement.fr/action/l-ecole-numerique.

⁷⁰ See <https://handicap.gouv.fr/archives/les-propositions-du-cih-2-decembre-2016/article/developper-des-solutions-innovantes-grace-au-numerique>.

⁷¹ CIH (2019), *Manifeste pour un Etat inclusif (Manifesto for an inclusive State)*, <https://handicap.gouv.fr>.

⁷² Report produced for the Secretary of State for Digital Affairs, May 2018.

Teachers can also be considered as inclusion professionals and may have a role to play in inclusion using digital technology as well as in mediation in the use of digital technology. Within the framework of the digital plan for schools, the Government plans to train teachers and workers. Digitalisation is also seen as an opportunity to train teachers in the Universal Design for Learning approach, including the use of digital resources for teaching to diversify and adapt teaching approaches.

In reference to the opportunities digital technology offers for diversifying the teaching approaches of students targeted by the Ministry for Tertiary Education and Research, the ministry highlights the importance of providing training and support to teachers in the use of digital information (CIH, 2019). In fact, a survey carried out by the Organisation for Economic Co-operation and Development (OECD),⁷³ whose first results for 2018 were published by the Ministry for Education, shows that primary school teachers in France have more difficulties in supporting their teaching with digital tools than in other European countries, due to the quality, rather than the quantity, of training in the use of digital technology.⁷⁴ The National Plan for Inclusive Digitalisation includes the training of social workers.

Projects to develop mediation in the use of digital technology are being deployed in several sectors. For example, a national university (Conservatoire National des Arts et Métiers) and the Hospitals of Paris group are developing specific action training on multiple disabilities and digital facilities. This project focuses on telemedicine practices.

4.4 How digital inclusion is addressed via the training of people with disabilities

Since 2015, the reference framework for basic skills (*Certificat de connaissances et de compétences professionnelles – CléA*), which can be validated by a national diploma, includes a digital chapter in addition to reading, writing, safety and basic mathematics. This diploma is now offered to all disabled workers without qualifications and to young people in specialised institutions who cannot validate a traditional school diploma. Through the programme, all children validate basic digital skills.

As mentioned previously, disability inclusion is also promoted through digital careers, which may involve specific training such as the THalent⁷⁵ programme, which is supported by Agefiph. It addresses unemployed persons with disabilities and consists of a course organised by experts in disability. It involves employment support and raising employers' awareness. Upon completion of the course, a professional diploma or qualification is delivered that is recognised by companies. Specific programmes intended to provide persons with autism with competences in back-end or front-end data science are offered by training organisations and promoted by Pôle emploi, the national employment agency.⁷⁶

⁷³ Organisation for Economic Co-operation and Development (OECD), Teaching and Learning International Survey (TALIS), <https://www.oecd.org/education/talis/>.

⁷⁴ See https://www.education.gouv.fr/talis-teaching-and-learning-international-survey-2018-9815#Premiers_resultats_de_l_edition_2018.

⁷⁵ See <https://www.agefiph.fr/actualites-handicap/thalent-digital-un-parcours-accessible-vers-les-competences-et-metiers-du-1>.

⁷⁶ See <https://www.pole-emploi.fr/actualites/le-dossier/pratique/emploi-et-handicap/a-la-une/atteint-du-syndrome-asperger---d.html>.

4.5 The most significant opportunities presented by digitalisation and digital transformation for persons with disabilities

This section and those that follow are based on three main sources:

- an analysis of scientific literature on digital accessibility;
- consultations carried out with disabled public servants; interviews (50) with experts from academia, companies, NGOs and administrations;
- two workshops organised by CNNum.

CNNum reported on digital inclusion in three sectors in which it considered digital technology had a particular role to play as regards citizenship, culture and knowledge.⁷⁷ As far as citizenship is concerned, in a country where 67 % of administrative procedures were carried out online in 2019, with an objective of 100 % for 2020, CNNum considers digitalisation a lever to improve access to public services.⁷⁸ In a context where the dissemination of culture widely relies on digital media and where digital technology appears to be a flexible means of access to and dissemination of information, digitalisation is seen as a means of ensuring the accessibility of culture.

Interviews conducted by CNNum (see section 5) confirmed the potential of digital technology to take into account impairment in access to knowledge and its potential to empower children with disabilities in some tasks, for example through compensation for impairments, as well as teachers and support workers, and interactions between children. They noted the opportunity digital tools offer to produce accommodated written or virtual material for teaching thanks to the possibility to accommodate characters or images.

In 2011, a former senator, Paul Blanc, made a series of recommendations in a report on school inclusion entitled *La scolarisation des enfants handicapés (Schooling for Disabled Children)*. They included making wider use of information and communication technologies in teaching and in the accommodation of school manuals and studies, and considering information and communication technologies as a lever to educate children with disabilities, and they highlighted the opportunity of digital technology as regards inclusive education.⁷⁹ ⁸⁰ CNNum also pointed out the fact that the digital inclusion of persons with disabilities could bring about new opportunities for the French economy thanks to the jobs, research and projects it could generate.

Disability inclusion through inclusive digitalisation could make it possible to reaffirm 'fundamental values such as inclusion, equality and non-discrimination, ecology and digital sobriety'.⁸¹

⁷⁷ Report produced for the Secretary of State for Digital Affairs, May 2018.

⁷⁸ Source: <https://www.data.gouv.fr/fr/>.

⁷⁹ French Senate, *Report on school inclusion*, 2011, <https://www.vie-publique.fr/sites/default/files/rapport/pdf/114000307.pdf>.

⁸⁰ Delaubier, Jean-Pierre, and Caraglio, Martine, *Les classes pour l'inclusion scolaire (CLIS) en 2010 (Inclusive classes in 2010)*, September 2011, p. 179, http://media.education.gouv.fr/file/2011/53/8/2011-104-IGEN_215538.pdf; Delaubier, Jean-Pierre, *La mise en œuvre de la loi du 11 février 2005 dans l'Éducation nationale (The implementation of the law of 11th February 2005)*, July 2012, https://cache.media.education.gouv.fr/file/2012/95/7/2012-100_-_rapport_handicap_226957.pdf.

⁸¹ CNNum (2020), *Accessibilité numérique*, p.12.

5 The most significant challenges faced by persons with disabilities in relation to digitalisation and digital transformation

The opportunities offered by digital technology as regards disability issues, as well as the barriers persons with disabilities may face in using this potential lever for inclusion, require identifying the challenges that persons with disabilities and the digital environment have to face, in order to reduce the risk of a digital divide.

In 2020, in its report on digital accessibility, CNNum recalled the rates of inactivity, unemployment and children being schooled in specialised institutions, which illustrates the segregation that persons with disabilities are still victims of. As mentioned previously, digital technology is considered as a potential lever to combat these forms of discrimination. However, the report on the benefits of digital autonomy (2.1) also provided some data on the people who were considered to be 'distant' from digital technology, which suggests that inclusion based on digitalisation is conditioned by the accessibility of digitalised information and digital technology as well as by the ability to use digital tools.

The report showed that the group that can be considered 'distant' from digitalisation accounted for 28 % of the population aged over 18, and highlighted the relationship between the use of digital technology and age, activity, employment, social-professional group and income: old people, labourers, unemployed people, those with the lowest level of qualifications and those with the lowest incomes are the most distant from digital tools. At the same time, disabled people tend to be older, less likely to be in employment, less educated and have less qualified jobs than the rest of the population,⁸² which makes them a population at risk as regards digital exclusion. In its report on digital accessibility, CNNum reported that an estimated 20 % of people were not able to use digital tools because of an impairment, which makes digital accessibility a major challenge for disability inclusion.

The risk of digital exclusion that disabled people face drives the consideration of digital inclusion as a particular challenge in disability inclusion. Nathalie Pinède has pointed out the paradox of accessibility, which is the fact that the use of digital technologies, although it is an opportunity for persons with disabilities, requires specific intellectual and physical abilities: using senses, handling, understanding and being able to find one's way in logical architectures and complex systems of signs.⁸³ In an interview on the website of the Villes Internet (internet towns) association, Armony Altinier, who is an expert in digital accessibility for inclusion, mentions the risk of social exclusion that persons with disabilities face when digital technology is not accessible as regards their impairment.⁸⁴

Taking into consideration the interaction between a person and his/her environment, the digital environment can be considered as a potential source of disability, making the risks and challenges the responsibility of the environment. Difficulties faced by

⁸² See 'Country fiche', European Semester.

⁸³ Pinède, Nathalie (2018), *Penser le numérique. Numérique et situations de handicap: le projet 'fractures corporelles, fractures numériques' (Digitalisation and disability situations: the project 'body divide, digital divide')*, <https://www.cairn.info/revue-communication-et-organisation-2019-2-page-139.htm>.

⁸⁴ See <http://www.villes-internet.net/site/handicap-entretien-avec-armony-altinier-experte-de-laccessibilite-numerique-au-service-de-linclusion/>.

persons with disabilities reveal that mediation and training for persons with disabilities are not enough.

The work carried out by CNNum has led it to:

- Note the lack of online public information, such as the absence of hierarchisation of information, the absence of image descriptions, the impossibility of enlarging characters and inappropriate ergonomics.⁸⁵
- Assume gaps in the legal framework for the accessibility of digital services (see, for example, the concept of 'disproportionate cost', section 1).
- Note the fragmentation of Government services in charge of inclusion: a secretary and an inter-ministerial directorate in charge of inclusive digitalisation; a secretary and a service (under the Secretary for Social Cohesion) in charge of disability inclusion.
- Note the failure to consider accessibility needs early enough in the process of services production (from design to implementation and beyond).
- Make a statement on some of the difficulties faced by persons with disabilities: in administrative procedures, which has consequences in terms of inclusion and citizenship in a context of 'inflation of online participation'. According to CNNum, only 4 % of public internet websites provided their certificates of compliance with RGAA rules. A survey conducted for the EC ranked France in 19th place in Europe for the accessibility of online public services.⁸⁶ For example, respondents interviewed as part of CNNum's survey mentioned.
- Difficulties linked to the reading of screens: captchas using only images, dysfunction of screen readers due to the complexity and dynamics of screen displays which put aesthetics before accessibility.
- Accessibility frameworks being 'too functional' and not sufficiently taking into consideration users' experience (for example, image descriptions so simple that they lose their meaning, lack of synchronisation between reading aloud and eye reading, etc.).

In an interview with representatives of Ville Internet, Armony Altinier also mentioned the impossibility of activating some functions by voice, and references to colours that some people cannot see.⁸⁷ In terms of access to digital culture, it seems that disability accessibility has not been guaranteed as part of the digitalisation of audio-visual media; access to i-resources for teaching were said to be complex, containing many images and not designed to be read by screen readers, and their adaptation follows a long process that may be a barrier for editors and for the quality of accommodations. Editors also highlighted technical difficulties in the adaptation of resources for teaching, and the fact that the time needed for technical adaptations reduced the time allocated to pedagogical accommodations.

The authors of the report also underscored the lack of human resources in the adaptation centres in charge of designing pedagogical accommodations and technical adaptations, and their unequal presence across the country leading to a loss of

⁸⁵ Data provided by the Ombudsman in the 2019 report *Dématérialisation et inégalités d'accès aux services publics*, p. 55.

⁸⁶ DG Communications Networks, Content and Technology (2013), Study on assessing and promoting e-accessibility, <https://digital-strategy.ec.europa.eu/en/library/study-assessing-and-promoting-e-accessibility>.

⁸⁷ See <http://www.villes-internet.net/site/handicap-entretien-avec-armony-altinier-experte-de-laccessibilite-numerique-au-service-de-linclusion/>.

efficiency, especially in the pooling of production means, which, moreover, takes place at the end of the process of production of adapted resources. Moreover, CNNum noted a lack of equipment and connectivity in schools.

The report highlights the lack of training for digital professionals: 43 % of the designers interviewed as part of CNNum's survey reported that they were unaware of the existence of disability-accessibility rules in law; 62 % were unaware of French rules regarding the accessibility of online public services; only 5 % felt that vocational training was meeting their digital accessibility skills needs; and 9 % felt that initial training was meeting accessibility requirements. CNNum also reported on the lack of accessibility on platforms and applications serving as intermediaries for adapted resources for teaching.

All these difficulties show that progress remains to be made in the accessibility of digital tools, starting with their design and production.

Teachers' use of digital technology as a source of information to adapt teaching to disabled children, including material adaptation that requires the use of digital tools, and as a teaching medium, shows the challenges faced by people working in the field of the empowerment of people (with disabilities) as regards their own digital skills. This suggests that professionals in charge of disability inclusion should have skills not only in disability accommodation but also in the use of digital technologies as a means to access professional skills. The process consists of identifying impairment and researching it as well as the tools that can be used to compensate for impairment or strengthen skills. This shows the importance of disability and digital technology skills for actors who play a role in the empowerment of persons with disabilities, in addition to the role of mediation in the use of digital technology and digital tool training for persons with disabilities.

As far as tertiary education is concerned, generalised accommodation is all the more difficult as there is no clear vision on the resources for teaching used by teachers, which largely depends on them.

In an article from 2018, Nathalie Pinède highlighted the fact that 'in order to limit the risks of digital divide and inequalities, the accessibility of websites, online services and other mobile applications is becoming a determining issue, for which numerous normative, regulatory, technical and educational tools exist.⁸⁸ Nevertheless, the implementation of digital accessibility, understood as a mediation instrument, is still fraught with many reservations, misunderstandings and difficulties. Other paradoxes can also appear in connection with positive injunctions concerning the inevitability of a digital world'. According to her, digital technology offers the opportunity to access information and communication, or even to build an online 'performative identity' but the injunction as well as the desire to take part in this universe can be hindered by barriers due to the design of services, which can lead to marginalisation or further accentuate disabilities. In addition to instrumental barriers that are mainly socio-economic, she mentions the second order digital divide relating to skills for information processing and sharing.

⁸⁸ Pinède, Nathalie (2018), *Penser le numérique*.

We can summarise by saying that the challenge of digital accessibility relates to the accessibility of the information itself, depending on its form and organisation and on the technical accessibility of the equipment and channel (media), but also on the disability and technology skills that can be mobilised not only by actors of mediation in the use of digital technology and disability but also by designers and producers of the information provided and the digital tools. The organisation of information should target its cognitive accessibility, its form (written, oral, image, numerical) and its accessibility as regards the ability to use senses and literacy; the media should be accessible not only from a technical point of view but also in combination with the organisation and the form of information.

The authors of CNNum's report noted some progress that supports disability inclusion. These are:

- the transfer of competences regarding the assessment of, information on and control of the accessibility of television services and audio-visual media to the future authority in charge of audio-visual regulation, ARCOM, which is expected to improve the accessibility of television programme services and audio-visual media;⁸⁹
- the implementation of digitalisation in schools and universities coupled with an increasing number of children and young adults with disabilities in mainstream schools and universities;
- the process of adaptation of resources for teaching to disability accommodation needs, which relies on cooperation between specialised teachers, regular school teachers and professionals in charge of technical adaptation.

In 2018, the barometer of accessibility of the French Association for Paralysed Persons indicated that 40 % of the websites of department capitals were accessible. However, this is not representative of the accessibility of all websites providing information to public.

Therefore, the main challenges of digitalisation for disability inclusion consist in ensuring the accessibility of digitalised services and digital tools as part of a holistic approach. According to Armony Altinier on the Villes Internet website, accessibility gaps in France are linked with a medical conception of disability that focuses on responsibility for the person's impairment.⁹⁰ This may explain the fact that the inclusive digitalisation strategy, apart from the actions based on the accessibility of equipment, is largely based on mediation in the use of digital technology and the training of persons with disabilities, which implies that persons in charge of mediation have good skills both in disability accessibility and in the use of digital tools. This is illustrated by the proposals made in the report on national inclusive digitalisation, which can be organised into three categories:

- reach, raise awareness and target public;
- organise the provision of mediation in the use of digital technology and training;
- enhance stakeholders' skills.

⁸⁹ Competences need to be clarified – see Articles 27 and 28 of Bill No. 2488 (*Project de loi relatif à la communication audiovisuelle et à la souveraineté culturelle à l'ère numérique*), introduced on 5 December 2019, https://www.assemblee-nationale.fr/dyn/15/textes/l15b2488_projet-loi.pdf.

⁹⁰ See <http://www.villes-internet.net/site/handicap-entretien-avec-armony-altinier-experte-de-laccessibilite-numerique-au-service-de-linclusion/>.

The report on inclusive digitalisation points to the benefits of empowering people through digital skills. In this regard, as far as persons with disabilities are concerned, the authors highlight the need to enable persons with disabilities to access and receive training in digital technology. They recommend:

- mainstreaming the duty of accommodation into the implementation of any dematerialised service;
- offering tax benefits for online mediation in the use of digital technology services;
- strengthening the disability training of support workers and human mediation actors in the use of digital technology;
- creating a taskforce to assess mediation in the use of digital technology for persons with disabilities.

The report focuses on the responsibility of digital professionals. On the other hand, according to Armony Altinier, placing the responsibility for accessibility on the digital environment itself may lead digital professionals to consider accessibility as very complex or to apply criteria without any overall view of disability, which may lead to inaccessibility. However, despite the progress noted with the transfer of competences to ARCOM regarding the accessibility of television services and audio-visual media, based on the comparison between the European directive and achievements on the one hand and on user interviews on the other, CNNum considers that the bill is not enough to ensure effective accessibility of digital culture.

Lastly, CNNum made 50 recommendations for the Government to consider within the framework of its inclusive digitalisation strategy and its disability strategy, some of which were also taken up by the CIH. They pertain to:

- citizenship: the accessibility of digital public services;
- culture: the accessibility of audio-visual content;
- knowledge: the accessibility of digital resources for teaching;
- employment, training and innovation, which should target disability-inclusive digitalisation;
- society: a culture of 'responsible digitalisation' that could be spread through the values of digital accessibility based on the opportunities it presents for society.

The recommendations target the disability issue within the scope of the accessibility of online public services, culture and knowledge.

Recommendations targeting the accessibility of online public services:

- creation of a ministerial delegation for digital accessibility in charge of monitoring the implementation of the rules in its report (DINAM);
- creation of a technical service dedicated to ensuring the quality and the accessibility of online public services linked with DINUM, and the establishment of a network of contact points in charge of the quality and accessibility of online public services at local level;
- raising professionals' awareness about disability: attach more importance to accessibility criteria in calls for proposals, carry out impact assessments to justify 'disproportionate costs', introduce digital accessibility training for civil servants etc;

- provide means for disabled people to assert their rights: create complaint platforms, enable group action.

Recommendations targeting the accessibility of culture:

CNNuM considers that, while much has been done to support the accessibility of culture from a legal standpoint, some difficulties remain as regards the accessibility of audio-visual material. The report suggested:

- regulating access to television and audio-visual media: extend the competences of the future authority ARCOM to include the media itself (not only the contents), extend accessibility regulations to the whole value chain of audio-visual media production;
- making the actors of the value chain aware of their responsibilities: standardise the accessibility regime across public services, promote the interoperability of accessible audio-visual material and standardise accessibility rules across audio-visual platforms.

As far as knowledge is concerned:

In its report, CNNuM considers that, in view of the right to education on the one hand and the right to access new technologies on the other hand, it is the responsibility of schools to make administrative information and knowledge accessible. This relies on the opportunities information and communication technologies can offer for the education of children with disabilities. As CNNuM points out, the CNCPH had already recommended addressing the issue of the accessibility of resources for teaching in a report from 2010.⁹¹

Despite the progress of digital transformation in schools, the issues of teacher training in disability and support for children with disabilities in the use of digital technology remain a challenge, according to CNNuM. Moreover, from the interviewees' point of view, the accessibility of resources for teaching depends on their technical accessibility (for example, compatibility with screen readers) and also on their pedagogical accessibility, which implies a disability-inclusive design of resources for teaching, offering alternative solutions and potential accommodations according to specific impairments. Despite the good practices identified, the use of digital technology by teachers and pupils, combined with pedagogical mediation, remains a challenge as regards disability. That is why CNNuM recommended improving:

- the production of accessible digital resources for teaching: improve the coordination of accommodations, assess the level of accessibility, organise the digitalisation of resources for teaching, support the production of disability accessible digital resources for teaching and support teachers in their choice of resources, create an accessibility reference framework for resources for teaching, communicate more widely on available disability inclusive digital resources;
- the accessibility of pedagogical platforms: insert accessibility requirements in technical specifications; pay particular attention to disability accessibility in

⁹¹ See www.autisme-france.fr/offres/file_inline_src/577/577_P_21097_1.pdf.

- platform quality controls; carry out a market survey on the quality and accessibility of digital services in universities;
- develop the skills of education professionals in the accommodation of resources for teaching and digital accessibility.

More generally, CNNum considers that the accessibility of digital technology is a matter of education, employment, innovation and a disability-inclusive culture, and that the empowerment of persons with disabilities in the use of digital technology remains necessary. It recommended:

- improving communication and training aimed at digital professionals on legal and technical rules regarding disability accessibility;
- organising the provision of mediation in the use of digital technology and training;
- encouraging the development of start-ups linked with digital accessibility;
- financing inclusive projects based on artificial intelligence;
- developing interdisciplinary research (for example, between education and digital technology);
- raising lifelong awareness about the issue of digital accessibility;
- designing responsible digital products and services.

Concerning the barriers persons with disabilities may face and possible solutions that could be used, CNNum reported on:

- the handling of material devices by people with mobility impairment who are deprived of their sense of touch or face hand mobility impairment: 'eye-tracking';
- Sensory barriers:
 - o blindness: Braille pages, character enlargement software;
 - o deafness: speech recognition;
- cognitive barriers: easy-to-understand language (*Français facile à comprendre – FALC*), specific characters to facilitate navigation on websites and within programmes.

Their appropriate use needs an appropriate combination of them.

6 Conclusions and recommendations

6.1 Conclusions

In a society where a growing number of sectors are digitalised, inclusion through digital technology is dependent on digital accessibility and access to digital technology. Digitalisation offers an opportunity for impaired people as it makes it possible to improve access to information, and consequently to services, employment, culture, education, and social life in an independent manner. Digital technology may even be a way for persons with disabilities to mobilise specific knowledge and know-how. On the other hand, depending on the type of impairment and ways of accessing digital tools as well as the form of information, persons with disabilities may also face barriers in access to digital technology and/or digitalised information, and these barriers may leave them particularly at risk of digital exclusion and exclusion more broadly.

More generally, all the principles of accessibility that have been applied since the 2005 law should extend to all news services, including digitalised services, which are a vector of access to citizenship, culture, knowledge and know-how. This implies not only that equipment should be accessible and that persons with disabilities should be guided and trained in order to become independent users of digital technology, but also that the current and future designers of digitalised services should be trained accordingly to make all the components of the value chain accessible, from the information to the devices. Key skills include the organisation of the information provided by these services and the form that conditions its accessibility, the accessibility of the media (characters, voice, images, colours, etc) and the accessibility of the material (interfaces, platforms, applications, equipment).

The technological divide is widely considered by the Government from a technical point of view, focusing on the mediation role of technology, which leads the French Government to concentrate on the development of infrastructure and also on mediation and training in the use of digital technology. Mediation in the use of digital technology and the training of persons with disabilities in the use of digital tools requires the development of skills in both disability and digital technology. The challenge France faces consists in the development of skills to ensure a more holistic approach to the accessibility of digital services and goods, from the design of information to the production of tools. This requires specific training of designers and producers of digital tools on the issue of disability accommodation but also cooperation between the designers of information, representatives of users' needs and designers and producers of the media and materials. The needs of persons with disabilities should be taken into account both in the forms of accessibility of information and in the design of the media and materials.

6.2 Recommendations

Making services and products accessible requires knowledge of different registers of representation, interpretation and communication, which is key for inclusion in general. Classifications of disability can be helpful in that sense but risk categorising people. However, the design of services and products has to take into consideration the differences in registers of representation, interpretation and communication at every stage of the process. As regards the issue of digitalisation, accessibility is a challenge at all stages of the value chain, from the design of services and products to the use of

the digitalised service or product, and the digitalisation of the service or product. At the same time, accessible digitalisation is an opportunity in terms of the accessibility of services and products, the economy, and the employment opportunities it represents for disabled and non-disabled people.

For these reasons, we would recommend the following:

- Continue the strategy of mediation in the use of digital technology and training of persons with disabilities as a lever to provide persons with disabilities with autonomy in the use of digital technology. Establish a cooperative framework for partnership between digital professionals and social workers at the local level targeting mediation in the use of digital technology and training of persons with disabilities. Such projects should be carried out by local and regional authorities.
- At a legal level, transpose accessibility requirements relating to the organisation of information, the form of the communication media, technical interfaces and equipment to all services and products subject to digitalisation.
- Enhance the training:
 - o of mediation actors: train digital professionals in accessibility and social workers in the use of digital tools. This could be organised by local and regional authorities in cooperation with universities and training centres.
 - o of product and service designers as regards the design of content, the alternative formats (characters, colours, voice) that should be offered and the organisation of information, for disability-accessibility. This could be carried out by universities and training centres.
 - o of professionals in charge of digitalisation in the needs of persons with disabilities concerning technical aspects (link between the content and the user: ergonomics, modality of activation of functions, synchronisation, eye-reading etc). This could be carried out by universities and training centres.
- Establish a framework for cooperation between representatives of persons with disabilities, designers of services and products subject to digitalisation and digital professionals at a national level. Raise awareness among professionals in charge of the design of services and products and digital tools about disability inclusion and among private actors about the economic benefits it can offer. This could result in the creation of a national organisation similar to ARCOM, which would deal with all the goods and services subject to digitalisation.
- Carry out a representative survey of the difficulties and needs of persons with disabilities in respect of access to digitalised services and products.

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