

**MONITORING PROGRESS IN NATIONAL INITIATIVES  
ON DIGITISING INDUSTRY**

**Country report**

*France*

*July 2019*



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## Summary

France has a favourable environment for digital transformation. The main strengths of the country are its entrepreneurial culture, significant amounts invested and an easy access to finance for companies. In addition, France can rely on a performant human capital and a skilled workforce.<sup>1</sup> However, there is still a room for improvement as France belongs to the medium performing countries in the Digital Economy and Society Index (DESI), ranking 18th in 2018. The main weaknesses of the country are its digital infrastructure (e.g. average broadband speed) as well as a relatively low number of information and communication technologies (ICT) companies, in particular among small and medium enterprises (SMEs). As a result, the country ranks 16th in terms of integration of digital technologies by companies and 20th for the connectivity in the DESI 2018.

France can rely on a good economic performance to increase its investment in ICT. France's gross development product (GDP) has increased by 2.4% between 2015 and 2017. With 3.2% of its GDP invested in ICT, the country ranked 6<sup>th</sup> in the EU in 2015, according to the OECD.

France aims to improve the digitalisation of its industry with an ambitious strategy published in September 2018 (Transform our industry through digitalisation). One of the main goals is to coordinate all the different initiatives within one main strategy. The main actions included aim to support the digital transition of SMEs and to ease the transfer of digital technologies to the industry through the development of a network of Digital Innovation Hubs and the development of digital platforms in the main industrial sectors. This strategy is the continuation of the main programme for digitising industry, (Industry for the future) and coordinates the existing initiatives (Digital France for SMEs and the Technical Centres for Industry). Transform our industry through digitalisation aims to be the main instrument to support the digitalisation of the country in the future and has the objective to support 10,000 SMEs towards 2020. Overall, in 2018, at least EUR 74.74 billion have been invested in digital initiatives and support mechanisms in France.

In addition to its main national strategy, France can rely on several actions that fall under the different Digital European Industry strategy: Alliance of the Industry of the Future, French tech and French Tech initiative with a budget of at least EUR 600 million since 2015 across Pillars 2 and 3 of the Digitising European Industry - DEI), the French competitiveness clusters with an average budget of EUR 1.5 million per clusters and the above-mentioned Technical Centres for Industry, which can rely on EUR 304 million (Pillar 2). The National Investment Plan and the Investment Programme for the Future 3 are the main support mechanisms in France with respectively a budget of EUR 57 billion and EUR 10 billion. Regarding the support to e-skills (Pillar 5), the Great School of Digital is the main action to train students with digital skills with a budget of EUR 71,277,924. The two main French support mechanisms also support the transformation of the skills with a budget of EUR 14.6 billion dedicated to the development of e-skills for the workforce. In order to make its legal system fit for the digital age, France has implemented the Law for a Digital Republic in 2016 (Pillar 4), which aims to cover all the aspects of the digital. One of the most recent developments in the French initiatives for digitalisation the industry is the National strategy to support research development on Artificial Intelligence launched in November 2018.

Table 1 presents an overview of the main initiatives identified, that will be further detailed in this report. Table 2 presents a short strength, weaknesses, opportunities and threats (SWOT) analysis of France on digitalisation.

**Table 1: Overview of initiatives**

Initiatives	Starting year	Overall strategy/DEI Pillar/support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
<i>Initiative France Numérique</i> (Digital France)	2012 and modernised in 2017	National strategy	Programme	All industrial sectors.	All digital technologies.	All companies	The strategy is 100% funded by public funds through the National Plan for Investment 2018-2022 and the Investment Programmes for the future 3.
<i>Stratégie Numérique du Gouvernement</i> (Digital strategy of the government)	2015	National strategy	Roadmap	All industrial sectors.	All digital technologies.	All companies	This strategy serves as a general framework for the French digital transformation. It does not rely on funds.
<i>Industrie du Future</i> (Industry for the Future)	2015	National strategy	National strategy for the modernisation of the French industry	All industrial sectors.	All digital technologies.	All companies	The strategy is 100% funded by public funds through the National Plan for Investment 2018-2022 and the Investment Programmes for the future 3. From 2015 to 2017, EUR 2.5 billion in tax incentives and EUR 2.1 billion in loans for SMEs.

Initiatives	Starting year	Overall strategy/DEI Pillar/support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
<i>Industrie par le numérique</i> (Transform our industry through digitalisation)	2018	National strategy	Roadmap	All industrial sectors.	All digital technologies.	All companies.	The strategy is 100% funded by public funds through the National Plan for Investment 2018-2022 and the Investment Programmes for the future 3. At least EUR 1,544 billion will be spent for this strategy until 2022.
Alliance of the Industry of the Future ( <i>Alliance pour l'Industrie du Futur – AIF</i> )	2015	Pillars 2,3	Public-private partnership	All industrial sectors.	All digital technologies.	All companies.	Funded through membership fees.
French tech and French Tech initiative	2013	Pillars 2,3.	Public-private partnership/ Digital Innovation Hub.	All industrial sectors.	All digital technologies.	Start-ups	Since 2015, at least 600 million: 200 million from the French Tech Acceleration Fund (2015) and additional EUR 400 million in 2018.

Initiatives	Starting year	Overall strategy/DEI Pillar/support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
French competitiveness clusters (pôles de compétitivité) and France IT	France cluster: 1998. France IT: 2010.	Pillar 2	Innovation clusters.	All industrial sectors.	All digital technologies.	All companies.	National, regional, private funds (private investors that participate in the clusters) and European Fund for Regional Development. In 2016, the average budget for one competitiveness cluster was of EUR 1.5 million.
Technical Centres for the Industry	More than 60 years ago.	Pillar 2	Digital Innovation Hubs.	All industrial sectors.	All digital technologies with a potential industrial use.	All companies.	The CTI have financial resources of EUR 304 million <sup>2</sup> coming from public funds.
Law for a Digital Republic	2016	Pillar 4	Data ownership, data privacy regulation and liability regulation measures.	Industry, public sector.	All.	All companies.	Regulatory measure.
Law of the 26 <sup>th</sup> February 2018 implementing the NIS Directive	2018	Pillar 4	IT security regulation.	Crucial industrial sectors for the economy: energy, transport, public services, defense.	All.	All companies.	Regulatory measure.

Initiatives	Starting year	Overall strategy/DEI Pillar/support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
<i>Grande école du Numérique - GEN</i> (Great school of digital)		Pillar 5	Training centres, Counselling Centres, training staff.	All industrial sectors.	All digital technologies.	The training programmes target individuals.	In 2017, EUR 71,277,924 from public funds (national and regional).
<i>Grand Plan d'Investissement 2018-2022</i> (National Investment Plan 2018-2022) -GPI- and the <i>Programme d'Investissement pour l'Avenir 3</i> (Investment Programme for the Future 3) -PIA3	2016 (GPI) and 2018 (PIA3)	Support mechanism	Funding programmes.	All industrial sectors.	All digital technologies.	All companies.	EUR 57 billion until 2022 for the GPI among which EUR 10 billion from the PIA3.
<i>Plan d'Action pour l'investissement et la croissance des entreprises</i> (Action Plan for Investment and enterprises' growth)	2017	Support mechanism	Funding programmes.	All industrial sectors.	Disruptive technologies.	All companies.	EUR 10 billion.

Initiatives	Starting year	Overall strategy/DEI Pillar/support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
<i>Credit d'impôt recherche -CIR-</i> (tax credit for R&D)	1983	Support mechanism	Funding programmes.	All industrial sectors.	All digital technologies.	All companies.	EUR 5.5 billion in 2018.
French Tech Acceleration Fund	2015	Support mechanism	Funding programme	All industrial sectors	All digital technologies.	Start-up	EUR 600 million
French government strategy to support research development on Artificial Intelligence	2018	Support mechanism	Funding programme	All industrial sectors	Artificial intelligence	All companies.	EUR 665 million (2018-2022)
Voucher IoT	2018	Support mechanism	Funding programme	All industrial sectors	IoT and connected devices	SMEs	A grant of 15% of the price of the service is offered and up to EUR 30,000 for each project
<i>Aide pour la faisabilité de l'innovation</i> (support for the feasibility of innovation)	N/A	Support mechanism	Funding programme	All industrial sectors	All digital technologies.	All companies	N/A



Initiatives	Starting year	Overall strategy/DEI Pillar/support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
<i>Aide pour le développement de l'innovation</i> (support for innovation development)	N/A	Support mechanism	Funding programme	All industrial sectors	All digital technologies.	SMEs	Recoverable advance or loan up to EUR 3 million

**Table 2: SWOT analysis of France on digitalisation**

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Entrepreneurial culture;</li> <li>• Powerful and dynamic network of SMEs;</li> <li>• Easy access to finance for companies;</li> <li>• Skilled workforce.</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Connectivity;</li> <li>• Low degree of integration of digital technologies by companies.</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Availability of several mechanisms to financially support enterprises;</li> <li>• Significant support to develop digital skills;</li> <li>• A strong network of DIH and Technical industrial centres;</li> <li>• Significant support to the development of public-private partnership.</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Lack of resources of small companies to digitalise their activities;</li> <li>• Lack of visibility of the main initiatives that aim to support small enterprises' digital transition;</li> <li>• The need for significant financial resources to support the different strategies.</li> </ul>

# 1 General context

The objective of this report is to analyse the current status of national initiatives on digitising industry in France. The analysis has been conducted against the background of the Digitising European Industry (DEI), which was the first industry-focused initiative of the Digital Single Market launched by the European Commission in 2016.

Similar country reports will be produced for each of the 28 EU Member States. These national reports allow to:

- Monitor the development of national initiatives on digitising industry;
- Compare different national approaches; and
- Identify best practices of national initiatives.

Monitoring and reporting back on the development of the existing national initiatives is an important element of the DEI initiative, and this report should be seen as one part of it.

For more details about the DEI and our methodological approach for the country report, please consult the document attached.

## 1.1 Economic context and status on digitisation

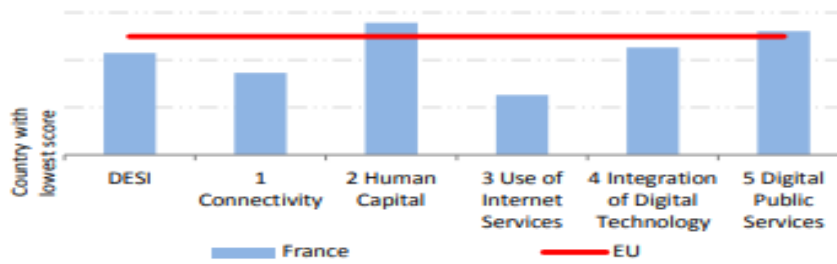
### *General economic context*

France, as the rest of the EU28, has benefited from a favourable economic context between 2015 and 2017, with an increase by 2.4% of its GDP per capita and a growth of 1.51%<sup>3</sup> of its working population. The French economic performance highly relies on its service sector which accounted for 86% of the total value added in 2017<sup>4</sup>. According to the OECD Digital Economy Outlook<sup>5</sup>, France is one of the OECD members that invests the most in ICT. With 3.2% of its GDP spent in ICT in 2015, France ranked 6<sup>th</sup> in the EU28.

### *Status of digitisation*

Given this significant investment in the ICT sectors, France has a favourable environment for digital transformation. Nevertheless, France belongs to the medium performing countries in the Digital Economy and Society Index (DESI)<sup>6</sup>, ranking 18<sup>th</sup> in 2018 (see Figure 1). Several indicators can be used to shed light on digital performance of France. In terms of integration of digital technologies by companies, France is below the EU average (16<sup>th</sup> in 2018) despite progress (+ 3.1 points from 2017). France has also an average position in terms of connectivity performance as it ranks 20<sup>th</sup> among the EU Member States. All French households are fully covered by fixed broadband (100%) but only 47% of them have access to a fast-broadband network.<sup>7</sup> France achieved its best score in the Human Capital dimension, ranking 11<sup>th</sup> in 2018. This good performance can be linked to the significant education and vocational training pillar of the French digital strategy (see for instance the Great school for digital, section 2.3).

**Figure 1: French DESI performance by dimension**



Source: European Commission, 2018.<sup>8</sup>

In 2018, the World Economic Forum carried out an of France's readiness for the future of production and assessment and scores the country with a 6.9 out of 10 for drivers of production and 6.9 out of 10 for the structure of production. A breakdown of drivers is provided in the figure below:

**Figure 2 France's readiness for the future of production<sup>9</sup>**

**Readiness Overall Assessment**

**Drivers of Production 6.9**

Driver	Weighting	Rank	Score /10
Technology & Innovation	20%	14th	6.8
Human Capital	20%	23rd	6.5
Global Trade & Investment	20%	14th	6.9
Institutional Framework	20%	21st	7.3
Sustainable Resources	5%	10th	8.2
Demand Environment	15%	10th	6.5

**Structure of Production 6.9**

Structure	Weighting	Rank	Score /10
Complexity	60%	15th	8.0
Scale	40%	28th	5.2

Source: World Economic Forum (2018)

Table 3 provides a summary of the main indicators for the French economic context and status of digitisation.

**Table 3: Economic context and status on digitisation**

	% GDP from manufacturing	% increase GDP growth	DESI position – and change	DESI sub-indicators Human Capital, Use of Internet, Integration of Digital Technology in 2018
France	14% (2017)	1.1% in 2015, 1.2% in 2016, 2.2% in 2017.	18 <sup>th</sup> in 2018 (same than in 2017)	<ul style="list-style-type: none"> <li>• Human Capital: 11<sup>th</sup> (10<sup>th</sup> in 2017)</li> <li>• Use of Internet services: 24<sup>th</sup> (25<sup>th</sup> in 2017)</li> <li>• Integration of Digital technology: 16<sup>th</sup> (16<sup>th</sup> in 2017)</li> </ul>

## 1.2 National strategies on digitising industry

In September 2018, the French government presented its strategy for the coming years on digitising the industry. *Transformer notre industrie par le numérique* (Transform our industry through digitalisation)<sup>10</sup> is the continuation of previous digitalisation initiatives (e.g. *Industrie du Futur* -Industry for the Future-)<sup>11</sup> and coordinates its action with other existing programmes (e.g. *Initiative France Numérique* -Digital France-)<sup>12</sup> to achieve its objective. The French approach to digitisation is part of the broader framework set in 2015 in the Digital Strategy of the government.<sup>13</sup> See Table 4 for an overview of the main French strategies to digitise the industry.

**Table 4: Overview of main national strategies**

Name	<i>Initiative France Numérique</i> (Digital France)	<i>Stratégie Numérique du Gouvernement</i> (Digital strategy of the government)	<i>Industrie du Futur</i> (Industry for the Future)	<i>Transformer notre Industrie par le numérique</i> (Transform our industry through digitalisation)
Type	Programme that aims to support SMEs in their digital transition through tailored expertise, guidance and a one-stop-shop portal.	Roadmap, action plan.	National strategy for the modernisation of the French industry.	Roadmap that sets out the future steps of the French strategy for the digitalisation of its industry. This roadmap is the continuation of the national strategy <i>Industrie du Futur</i> .
Starting date	2012 and modernised in 2017	2015	2015	2018
Objective	In 2012, the national programme <i>Transition Numérique</i> was launched to support SMEs in their digital transition. The programme was modernised in 2017 and is now called <i>France Numérique</i> .	Roadmap for the French digital transition.	Part of the broader strategy <i>La nouvelle France industrielle</i> (the New Industrial France), this initiative aims to modernise the French industry through digitalisation.	Presents the French strategy to foster the digitalisation of its industry by supporting SMEs and micro-enterprises and by increasing synergies between different industrial sectors.
Ministry/ministries in charge (website, contact person)	Ministry of Economy. <sup>14</sup>	Ministry of Economy. <sup>15</sup>	Ministry of Economy <sup>16</sup>	Strategy developed by the French government and implemented by the Ministry of Economy. <sup>17</sup>
Scope of the strategy/action plan	Targets SMEs and their needs for their digital strategy.	Deals with digital as a whole be it as a driver of growth or in terms of legal impacts on citizens' rights.	First launched in 2015, <i>Industrie du futur</i> targets all French enterprises be it SMEs or non-SMEs.	The strategy outlines the need to support SMEs and micro-enterprises in their digital transition. The main industrial sectors are also concerned through the exchange of best practices.

Name	<i>Initiative France Numérique</i> (Digital France)	<i>Stratégie Numérique du Gouvernement</i> (Digital strategy of the government)	<i>Industrie du Futur</i> (Industry for the Future)	<i>Transformer notre Industrie par le numérique</i> (Transform our industry through digitalisation)
Measures included in the strategy/action plan	The programme relies on a network of consultants who help SMEs via regional helpdesks. the platform <i>France Numérique</i> (Digital France) is at the core of this initiative and serves as a helpdesk.	The Digital Agenda has four pillars: <ul style="list-style-type: none"> <li>• Freedom to innovate;</li> <li>• Equal rights related to digital activities;</li> <li>• Fraternity aims to ensure that all citizens will have access to digital progress;</li> <li>• The Exemplary pillar focuses on the digital transformation of the state.</li> </ul>	Initiative based on 5 pillars: <ul style="list-style-type: none"> <li>• Development of cutting-edge technologies;</li> <li>• Support of enterprises' digitalisation;</li> <li>• Training of workers;</li> <li>• Promotion of the <i>Industrie du futur</i>;</li> </ul> Enhancement of the international/European cooperation, creation of a governance body.	<ul style="list-style-type: none"> <li>• Support SMEs' digital transition through tax reduction;</li> <li>• Foster the development of digital platforms in the main industrial sectors;</li> <li>• Help micro-enterprises in their digital transition.</li> </ul>
Overall funding and distribution by volume and source of funding (public/private, EU/national)	The strategy is 100% funded by public funds through the National Plan for Investment 2018-2022 and the Investment Programmes for the future 3.	This strategy serves as a general framework for the French digital transformation. It does not rely on funds.	The strategy is 100% funded by public funds through the National Plan for Investment 2018-2022 and the Investment Programmes for the future 3. From 2015 to 2017, EUR 2.5 billion in tax incentives and EUR 2.1 billion in loans for SMEs.	The strategy is 100% funded by public funds through the National Plan for Investment 2018-2022 and the Investment Programmes for the future 3. At least EUR 1,544 billion will be spent for this strategy until 2022 allocated as follow: <ul style="list-style-type: none"> <li>• EUR 500 million to support the digital transformation of enterprises;</li> <li>• EUR 44 million invested in the R&amp;D;</li> <li>• EUR 1 billion for loans to SMEs.</li> </ul>

### **Digital strategy of the government**

The Digital strategy<sup>18</sup>, published by the government in 2015, is the national roadmap that paves the way to the country's digitalisation. Its pillars reflect the French national motto "Freedom, Equality, Fraternity":

- Freedom to innovate as the engine to growth: With this pillar, digitalisation is seen as an opportunity but also a mandatory step to modernise the French Economy. Undertakings of all sizes will be supported in their digital transition with national initiatives such as the French Tech, *Industrie du Futur*, *Transition numérique* (see below).
- Equality of rights to ensure equal protection of users and citizens: In the digital era, consumers and citizens' rights will evolve, which means the legislator will need to frame this legal transformation.
- Fraternity to allow everyone to benefit from the progress entailed by digitalisation: This means a full broadband coverage on the whole territory or the support to digital skills for youngsters and job seekers.
- Exemplarity, the fourth pillar, while not being part of the national motto, relates to the digital transformation of the state's services such as the e-administration.

This strategy also sets the framework to the Law for a Digital Republic (*Loi pour une république numérique*), the main regulatory framework for digital issues in France (see Section 2.2).

The main operator of the French digitalisation strategy is the *Alliance Française pour l'Industrie du Futur* (Alliance for the Industry of the Future - AIF).<sup>19</sup> Created in 2015, AIF's role is to coordinate initiatives, projects and programmes that aim to modernise and transform the French industry. To date the organisation has already supported 3,400 SMEs.<sup>20</sup> The Alliance is a consortium made of private (sectorial organisations and trade-unions), public (academic organisations, research centres), technological organisations (technological institutes) and financing actors (public investors). The three missions (Develop-Accompany-Diffuse) are managed by six thematic working groups:

- Development of technologies for the future: the objective is to promote the integration of cutting-edge technologies in enterprises' business models.
- Deployment of regional support to companies: to develop a regional network that will accompany enterprises in their digital transformation.
- Humans and Industry of the Future: to develop digital skills for the workforce in order to match demand of the job market.
- Normalisation at international level: to promote the standardisation at European and international levels.
- Promotion of existing technology supply: to inform enterprises about available technologies and existing solutions for their digital transition.
- Show-cases of Industry of the Future via a label awarded to success story enterprises.

Since 2017, a partnership between AIF and the *Conseil National pour l'Industrie* – CNI (National Council for Industry) has been set up with the objective of accelerating the implementation of the *Industrie du futur* – IDF (Industry for the Future) and the deployment of cutting-edge technologies in the main industrial sectors.<sup>21</sup>

### **Industry of the future strategy**

Launched in 2015, the IDF initiative supports the digitalisation of the French industry through five axes:<sup>22</sup>



- The development of cutting-edge technologies and disruptive technologies that will transform production processes and the industry. Examples include the additive manufacturing or the digitalisation of the production chain;
- The support to enterprises' digitalisation through a network of regional helpdesks where consultants help enterprises in their digital strategy;
- The Vocational training and education of workers and future generations;
- The promotion of the *Industrie du futur* achievements in France and abroad;
- The enhancement of international/European cooperation.

The Industry of the future strategy has unlocked EUR 2.5 billion in tax incentives and EUR 2.1 billion in loans for SMEs with the aim of supporting companies in their digital transition.<sup>23</sup> To date, at least 5,200 SMEs have benefited from the IDF support to digitalise their activities.<sup>24</sup>

### ***Transform our industry through digitalisation***

The most recent French strategy for digitising industry is set out in a document published in September 2018 “*Transformer notre Industrie par le numérique*” (Transform our industry through digitalisation)<sup>25</sup>, which is the continuation of the *Industrie du futur* initiative. The aim is to strengthen the mobilisation, increase the support to enterprises in terms of quantity and quality and enhance coordination between the different industrial sectors. The strategy is based on four pillars:

- Transform the industry for the future, which sets out the main actions of the strategy;
- Develop a performant digital offer, which presents prime examples of sectors and supporting actions;
- Implement territorial strategies, which presents examples of regional initiatives that are relevant to the industry of the future;
- Support the digital transformation of SMEs and micro-enterprises.

The strategy aims to support 10,000 SMEs towards 2020 in addition to the 5,200 already supported by the *Industrie du futur* initiative (see the description above). The main financial support is a **tax reduction scheme**, which enables eligible SMEs to decrease their investment costs by 11% over two years. To be eligible, investments should be spent on robotics and digital transformation.

With this strategy, the French government also aims to support the development of **digital platforms in the 16 main national industrial sectors** (e.g. agriculture, aeronautics). The aim is to learn from best practices in industrial sectors well advanced in terms of digitalisation (e.g. aeronautics) and to transfer these models to other sectors that lag behind (e.g. agriculture).<sup>26</sup> For instance, the use of such platforms in the food industry could enhance the trackability of products' origin.<sup>27</sup> The main objective is to have one of this digital platform for each of the 16 main industrial sectors. To date, there are two platforms operational (aeronautics and automotive) and one is in working progress (agribusiness). About EUR 70 million of the PIA3 will support the development of these digital platforms.

Another significant action of this strategy is the **task force** set up with the objective to reflect upon the potential of a future network of local industrial platforms such as Digital Innovation Hubs. These platforms are physical infrastructures where enterprises have access to the latest technologies, test them and receive vocational training. The aim of this task force is to implement a roadmap to efficiently organise this network.

An important principle of this strategy is the relationship between the **state and the regions**. About EUR 80 million of the PIA3 is dedicated to the support of regional initiatives and the design

of action plans. The French regions will, in cooperation with the main industrial sectors, support local SMEs and the creation of one-stop shop to provide tailored expertise.

### ***Digital France initiative***

Finally, the French government aims to enhance its support to micro-enterprises in their digital transformation. Such micro-enterprises often have a low level of digitalisation due to limited financial and staff resources. This greater support will rely on the *France Numérique* (Digital France) initiative, a national programme that targets SMEs' digital transition.<sup>28</sup> The core of this programme is the coordination with a **regional network of consultants and contact points**, which provide tailored support and thematic expertise to SMEs. In the context of this strategy, the portal "France Numérique"<sup>29</sup> serves as a one-stop shop where SMEs can access information about funding opportunities and where to find local helpdesks. The new French strategy « *Transformer notre Industrie par le numérique* » also relies on Digital France to support SMEs' digital transition.

### ***France's Smart Specialisation Strategy***

The EU strategy to support the economic growth and development targets investment in education, research and innovation or sustainable growth. In this context, the EU funds for regional development are conditioned by the definition of a smart specialisation strategy for research and innovation. France's smart specialisation has prioritised five areas:<sup>30</sup>

- Manufacturing & industry;
- Sustainable innovation;
- Key Enabling Technologies;
- Energy production & distribution;
- Human health & social work activities.

The national strategies on digitising industry are therefore aligned with the national smart specialisation strategy. Then, all French regions have defined priorities for their investments based on their strengths and constraints.<sup>31</sup> The Smart Specialisation Strategy is a European initiative implemented through different national actions. In Table 1, we have presented the French strategies linked to this broader Smart Specialisation Strategy.

### ***National Strategy to boost research in Artificial Intelligence***

In November 2018, the French government announced a strategy to support research development on Artificial Intelligence. The aim is also to invest in cutting-edge infrastructures and in training of PhD students. Finally, the R&D cooperation with European Member States and in particular Germany will also be supported in order to be able to compete with China and the US.<sup>32</sup> We have mentioned this national strategy as it will impact the Artificial Intelligence sector in the coming year. However, it is not reflected in Table 4 as the implementation of this strategy has not produced any impacts yet.

### ***The French very high-speed broadband plan***

This national plan was launched in 2013 with the aim to ensure that every home, business and government office in the country will have access to high-speed broadband by 2022.<sup>33</sup>

Two core objectives have been set by the French government:

- A minimum broadband speed of 8Mbits/s for all by 2020;

- A minimum broadband speed of 30Mbits/s for all by 2022.

To date, almost all the French regions are on track to achieve the 8Mbits/s objective for 2020.<sup>34</sup> This plan is worth noting, given its importance for the overall level of digitalisation of France. However, since it does not fall under any pillars of the DEI or has no direct impact on the industry, it is not reflected in Table 4.

### ***Main challenges and perceptions***

According to stakeholder feedback, one of the main challenges for the digitalisation of the industry is the lack of visibility of the different supporting measures for SMEs and micro-enterprises. Small enterprises need to be incentivised to start their digital transition.<sup>35</sup>

## **1.3 EU cooperation in the field of digitising industry initiatives**

The main stakeholder promoting French cross-border collaboration is AIF. Three main collaborative schemes exist:

- Industrial collaboration with one or two countries: to date, France has set up partnerships with Germany and Italy. France and Germany have agreed to join forces to coordinate their industrial policies through, for instance, sharing best practices or the development of common test infrastructures.<sup>36</sup> The Franco-German cooperation has already led to concrete industrial synergies such as the collaboration between Baylo (France) and Linde (Germany) for the building of smart lift trucks.<sup>37</sup> Since 2017 this bilateral cooperation has been extended to Italy.<sup>38</sup> France has developed a similar partnership with China.<sup>39</sup>
- Networking and representation of French interests to the European Commission: the aim is to relay the French industry's interests, to liaise with European counterparts and to promote standardisation for industrial matters.<sup>40</sup>
- EU cooperation through the coordinated plan on the development and use of Artificial Intelligence (AI) made in Europe.<sup>41</sup> In December 2018, the Commission has proposed a coordinated plan aiming to support the development of AI in the EU through joint actions or cross-border activities in AI. This plan also incentivises EU Member States to develop a national AI strategy. France has already adopted a plan that supports the development of the AI (see section 2.1).
- Important Projects of Common European Interest to support research and innovation in microelectronics involves: since 2018, France participates with Italy, Germany and the UK in this EUR 1.75 billion project that aims to support research and development in microelectronics technologies that will later be integrated in industrial applications. The project will be completed by 2024 and involves 29 participants from the Member States. France will fund the project with EUR 355 million.<sup>42</sup>
- Finally, France participates in the ECSEL Joint Undertaking - the Public-Private Partnership for Electronic Components and Systems.

## **2 Other policy support to digitising industry**

### **2.1 Boosting innovation capacity**

Several French initiatives are relevant for pillars 2 and 3 of the Digitising European Industry Initiative. They are not gathered under one single umbrella initiative; hence the aim of the government is to coordinate all these initiatives through a single strategy.<sup>43</sup>

The table below presents an overview of the main initiatives identified under Pillars 2 and 3.

**Table 5: Overview of main initiatives to boost innovation capacity**

Name	Technical Centres for the Industry	French competitiveness clusters ( <i>pôles de compétitivité</i> ) and France IT	French tech and French Tech initiative	Alliance of the Industry of the Future ( <i>Alliance pour l'Industrie du Futur</i> – AIF)
Type	Digital Innovation Hubs	Innovation cluster.	Public-private partnership /Digital Innovation Hub.	Public-private partnership.
Starting date	More than 60 years ago.	France cluster: 1998. France IT: 2006.	2013	2015
Objective	The network of Technical Centres for Industry -CTI- participates in the implementation of the <i>Industrie du futur</i> initiative by providing testing infrastructures to enterprises.	To coordinate actions supporting the French digital clusters.	To gather and coordinate all the stakeholders from the French start-up ecosystem.	AIF conducts and manages the French strategy for digitalisation.
Relevant for Pillar 2 <sup>44</sup> or Pillar 3 <sup>45</sup> or both	Pillar 2	Pillar 2	Pillars 2 and 3.	Pillars 2 and 3.
Short description	The CTI network gathers 17 CTI representing each an industrial sector (e.g. concrete industry, machinery industry). The CTI supports the research and transfer of technology to enterprises for each industrial sector.	France cluster gathers all the French clusters and supports their development. France IT is the association of digital clusters, which supports them in their activities.	The French Tech aims to support the French start-ups through network activities, financial support and by providing Hubs for start-ups. Most of the start-ups are active in the digital sector.	It supports and accompanies enterprises and especially SMEs in their digital transition.
Granting organisation	CTI and the CTI reseau (CTI network).	France clusters, France IT	French Tech	AIF
Participating organisations	The 17 French CTI.	French clusters and French digital clusters.	French start-ups.	Research centres, professional associations.
Sectors targeted	All industrial sectors.	All industrial sectors.	All industrial sectors.	All industrial sectors.
Technologies targeted	All digital technologies with a potential industrial use.	All digital technologies.	All digital technologies.	All digital technologies.

Name	Technical Centres for the Industry	French competitiveness clusters ( <i>pôles de compétitivité</i> ) and France IT	French tech and French Tech initiative	Alliance of the Industry of the Future ( <i>Alliance pour l'Industrie du Futur</i> – AIF)
Funding (split by private/public and national/EU), state period/annual funding	The CTI have financial resources of EUR 304 million <sup>46</sup> coming from public funds.	National, regional, private funds (private investors that participate in the clusters) and European Fund for Regional Development. In 2016, the average budget for one competitiveness cluster was of EUR 1.5 million.	Public funds. Since 2015, at least 600 million: 200 million from the French Tech Acceleration Fund (2015) and additional EUR 400 million in 2018.	Funded through membership fees.
Current status of initiatives	The 17 CTI are in contact with 46,000 enterprises among which 11,000 SMEs. The network has 64 infrastructures.	Ongoing.	Ongoing.	Ongoing.

### ***Alliance for the future of the industry (Alliance Industrie du Futur)***

AIF is the main governing body in the context of French national digitalisation strategies and of pillars 2 and 3. AIF is a consortium of private and public partners that support the development of R&D projects. Such supporting schemes can take the shape of projects sponsorship, for instance the project holder benefits from AIF's expertise and support during the financing process. In addition, AIF enhances innovation and supports enterprises' digitalisation with the promotion of digital platforms where SMEs can access technologies and develop their R&D projects. According to the AIF, such platforms are a great way to mutualise competences and knowledge and to share them with SMEs.<sup>47</sup>

Above all, AIF has developed a network of local representatives and consultants supporting regional authorities by providing technical expertise to SMEs. For instance, SMEs can benefit from tailored advice with a diagnosis of their situation and guidance for their digital strategy with guideline on the technologies they can adopt and integrate, the training or available funding schemes.<sup>48</sup>

### ***Technical Centres for the Industry (Centres Techniques Industriels)***

The *Centres Techniques Industriels* – CTI (Industrial Technical Centres) facilitate the transfer of technology and knowledge from research centres to the industry through regional platforms that act as a Digital Innovation Hub (DIH). All of these centres are supported by sectorial professional organisations and provide regional infrastructures where enterprises can test the technology, receive thematic expertise and guidance.<sup>49</sup> This network of Industrial Technical Centres is used by the strategy 'Transform our industry through digitalisation' to foster synergies between the different industrial sectors and to support the development of such DIHs.

### ***French clusters and France IT (pôles de compétitivité France)***

France has adopted a dynamic policy for the development of its *pôles de compétitivité* (competitiveness clusters).<sup>50</sup> The country has now more than 71 clusters that aim to promote collaborative R&D projects through public-private partnerships<sup>51</sup> with a specific emphasis on providing services to SMEs. This cluster policy is highly relevant for pillar 2 as most of the French clusters are Digital Innovation Hubs *per se*.<sup>52</sup> French clusters are gathered in the France Clusters association, which aims to foster networking activities, to facilitate exchanges of best practices and to provide guidance and expertise to the clusters. Within this association, France IT (IT France)<sup>53</sup> gathers all the French digital clusters and supports them by:

- Accompanying clusters in their development and on how to support the digital enterprises they are liaising with;
- Providing training to clusters and to digital enterprises;
- Facilitating networking activities between clusters and organising meetings to foster the exchange of good practices.

As these clusters are often parts of regional strategies, they can benefit from from European funds and the European Fund for Regional Development -ERDF- in particular.<sup>54</sup>

### ***French Tech***

The French Tech is a national initiative that aims to foster the development of the start-ups ecosystem. The French Tech is the structure that gathers all stakeholders related to French start-ups (start-ups, investors, research centres, associations...)<sup>55</sup> To date, 13 French Metropoles have received the French Tech label. This means that these Metropoles are deemed fit for supporting French start-ups by providing infrastructures where start-ups can benefit from cutting-edge technologies and test their innovation.<sup>56</sup> The French Tech Metropoles network also

facilitates the connection between public/private stakeholders and investors and potential recipients. One example of test infrastructures offered is the French Tech Central Hub.<sup>57</sup> About 300 m<sup>2</sup> are available in Paris where start-ups can receive advice about administrative procedures, test technologies, network with other start-ups, meet research centres or just attend conferences.

**Main impacts, perceptions and challenges**

According to stakeholder feedback<sup>58</sup>, stakeholders are aware of the initiatives and the AIF in particular is deemed as a relevant initiative (a score of 5 was given on a 1-5 scale). Their contribution to the uptake of digital technologies is seen as satisfactory (3 out of 5). The types of initiatives deemed the most efficient to promote digitalisation are the ones that present the opportunities linked to the digital transition and which accompany and support enterprises.<sup>59</sup>

In 2018, 12 French fully operational DIH are referenced by the Commission. To date, the assessment of the number of businesses benefiting from DIH is challenging, since there is no central registry or database in which all the recipients are listed. However, Cap Digital, one of the largest clusters in Europe based in Paris can be used as a proxy.<sup>60</sup> The cluster provides its 1,000 members with intelligence, training, personalised support and test infrastructures for digital innovation. Since its creation in 2006, it has labelled 1,350 projects and funded about 750 ones. In addition, the consortium of French digital clusters France IT gathers 11 clusters that impact 2,500 enterprises.<sup>61</sup> From 2015 to 2017, the French total CAPEX has increased by 11.49% to reach EUR 619,414.5 million.<sup>62</sup>

France has a favourable environment for start-ups. In 2017, the country was the OECD member with the highest share of the population that wishes to create an enterprise.<sup>63</sup> The same year, the country was hosting 9,500 start-ups<sup>64</sup>, which have seen an increase of 33% in their revenues in 2016.

**2.2 Regulatory framework for digital age**

The table below presents the main regulatory initiatives for a digital age (Pillar 4 of the DEI).

**Table 6: Overview of digital regulatory framework**

Name	Law for a Digital Republic	Law of the 26 <sup>th</sup> February 2018 implementing the NIS Directive
Type	Data ownership, data privacy regulation and liability regulation measures.	IT security regulation.
Starting date	2016	2018
Objective	To provide a legal framework to the French digitalisation strategy.	To strengthen cybersecurity for operators active in crucial sectors for the national economy.
Short description	The law opens up public data, strengthens the protection of users' rights and data privacy and ensures that the opportunities due to digitalisation benefit to all.	Operators active in crucial sectors for the national economy have to comply with more stringent security measures to ensure the security of their network and information systems.
Sectors targeted	Industry, public sector.	Crucial industrial sectors for the economy: energy, transport, public services, defense.

### ***Law for a Digital Republic***

The Law for a Digital Republic<sup>65</sup> is the main legal framework for digital matters in France and one of the achievements of the French Digital strategy (see section 1). Entered into force in 2016, this law aims to:

- Accelerate innovation through the sharing of information and knowledge;
- Create a framework of confidence by protecting users' rights and data privacy;
- Ensure that the digitalisation benefits to all.

To date, with the implementing decrees, the main impacts of the law are:

- Public data will progressively become freely accessible. So far, the type of data concerned are data from public institutes (such as the National statistical office), the main administrative documents (all the documents with economic, social, environmental impacts), data on enterprises (e.g. identification numbers), scientific publication as well as data about energy consumption.<sup>66</sup>
- Data privacy and users' rights are better protected. The sanctions are more stringent in case of misuse of private data, hackers that reveal any security breaches are better protected and the protection of private correspondence is strengthened as well.<sup>67</sup>

### ***Law of the 26<sup>th</sup> February 2018 implementing the NIS Directive***

France transposed Directive (EU) 2016/1148 on the security of network and information systems (NIS) with the Law of 26<sup>th</sup> February 2018.<sup>68</sup> This Law strengthens the obligations in relation to cybersecurity issues for operators that manage services deemed crucial for the economy and the society (*Opérateurs de Services Essentiels* -OSE-) as well as for digital service providers (*Fournisseurs de Service Numérique* -FSN-).<sup>69</sup> The new rules apply to the management of all data and not only personal data. The OSE and FSN must:<sup>70</sup>

- Identify a representative who will be the contact point for the national authorities about data management and for any issues related to cybersecurity;
- Declare the networks and the information systems used for providing the services;
- Report to the national authorities any incidents that might impact the security of the services provided;
- Comply with more stringent controls to check their degree of cybersecurity.

### ***“États généraux” about the new digital regulations***

This debate about the impact of digitalisation on regulation was launched in July 2018 and aims to support the reflection about the issues raised by the digitalisation of the society and how to legally frame this trend.<sup>71</sup> The topics discussed included among other the regulation of the digital content or how to protect the youngest when they use a digital channel. The ethic in the creation and management of Artificial Intelligence content was also another point tackled.

The “États généraux” about the new digital regulations have also introduced the possibility to label the IA algorithms in order to foster users' trust. The “États généraux” intends to be a roadmap for the future regulation, thus they are not reflected in Table 6.

### ***Main perceptions and challenges***

According to stakeholder feedback<sup>72</sup>, this framework is well adapted to the digital age although there is room for improvement for specific digital features (e.g. the cloud is still regulated by the



Heritage Code which is not fit for the digital age) (the appropriateness of the legal framework with the digital age was scored 3 on a 1-5 scale).<sup>73</sup>

## 2.3 Skills development

The table below presents the main initiatives under for the development of digital skills (Pillar 5 of the DEI).

**Table 7: Main initiatives for skills development**

Name	<i>Grande école du Numérique - GEN</i> (Great school of digital)	<i>Grand Plan d'Investissement – GPI</i> (National Investment Plan 2018-2022) and the <i>Programme d'Investissement pour l'Avenir 3 – PIA3</i> (Investment Programme for the Future 3) support to digital skills development
Type	Training centres, Counselling Centres, training staff	Investment grants, tax incentives
Starting date	2015	2016 (PIA3) and 2018 (GPI)
Objective	To support training courses provided to people at risk of unemployment in order to develop their digital skills.	To finance initiatives and programmes that support the modernisation of the industry.
Short description	The GEN has been created with the aim to support training that help to integrate people at risk of unemployment to the job market by developing their digital skills.	A significant share of these funds targets the development of digital skills.
Granting organisation	GEN	French government
Participating organisations	Organisations that provide training courses in relation to the digital.	Enterprises, research centres, organisations providing training courses.
Sectors targeted	All.	All.
Funding (split by private/public, national/EU), state period/annual funding	In 2017, EUR 71,277,924 <sup>74</sup> from public funds (national and regional).	Funded by public funds (national). About EUR 14.6 billion of the GPI target skills development (PIA 3 is now part of the GPI).
Current status of initiatives	400 training courses have been labelled since 2015 and 11,409 people have been trained. <sup>75</sup>	The GPI aims to train about 2 million people with the objective of integrating them into the job market.

### **Great School for Digital**

Most of the trainings are free and target categories of people with low digital skills or at risk of unemployment:

- Dropped out, unqualified or unemployed young people;
- Women;
- People coming from deprived neighbourhoods.

### **GPI and PIA3**

A significant share of the *Grand Plan d'Investissement* – GPI (National Investment Plan 2018-2022) and the *Programme d'Investissement pour l'Avenir 3* – PIA3 (Investment Programme for the Future 3) also support the development of digital skills, with a special focus on the integration of unemployed or people with low skills. The GPI and PIA3 are further described in Section 2.4 on support mechanisms.

#### **Main impacts, perceptions and challenges**

As shown in section 1, France has a performant and skilled Human Capital. The country's population with at least basic/advanced digital skills (57% in 2017) is close to the European average, but it has a significant share of graduates with a science and technology background (25.5 graduates per 1,000 inhabitants aged 20-29 years in 2016). This proportion has increased by 4.1 graduates from 2015 which might be explained by the first year of activity of the GEN.

## **2.4 Support mechanisms**

In France, the main financial mechanisms to implement the digital transformation of the economy are the ***Grand Plan d'Investissement 2018-2022*** – GPI (National Investment Plan 2018-2022) and the ***Programme d'Investissement pour l'Avenir 3*** – PIA3 (Investment Programme for the Future 3). Launched in 2018, the GPI will unlock EUR 57 billion until 2022. Its objective is to support the main economic and societal reforms for France through 4 axes:<sup>76</sup>

- Accelerating the ecological transition (EUR 20 billion) encourages the digitalisation of mobility services to achieve greener transport;
- Building a society of competences (EUR 15 billion) aims to support the training of youngsters and job seekers in order to match the job market's needs. A part of this pillar encourages e-skills development (see Section 2.3);
- Anchoring competitiveness in innovation (EUR 13 billion) helps enterprises in their digital transformation and supports innovation;
- Building the digital state (EUR 9 billion) will fund initiatives that foster the digitalisation of the state administration's services (e.g. e-health, e-communication between citizens and the administration).

The PIA is an investment programme that started in 2010 to prepare France to cope with challenges of the future. It supports R&D projects or initiatives that accelerate the modernisation of enterprises' business models. The third wave, the PIA3, was launched in 2016 and now integrated the GPI with an amount of EUR 10 billion. Within this plan, about EUR 4.1 billion will be spent to support innovation in enterprises.<sup>77</sup> Table 8 presents the main priorities of the GPI for 2018 that will support projects in relation to digitalisation.

**Table 8: Snapshot of the GPI priorities for 2018<sup>78</sup>**

Pillars	Funds (EUR millions)
<b>Accelerate ecological transition</b>	
Fund new mobility schemes and the digitalisation of transport	20
<b>Building a society of competences</b>	
Adaptation and training of the workforce	25
Invest in innovative solutions in the national education system	30
<b>Anchoring competitiveness in innovation</b>	
Support innovation and future challenges	665
<b>Building the digital state</b>	
Invest in medical research innovations, accelerate performant innovative ecosystems	10

These two funds mainly rely on calls for proposals to support projects. Then, the winners are supported through subsidies, refundable loans or direct participation in enterprises' capital.<sup>79</sup> The main financial operator that manages the allocation of funds is the French Public Investment Bank -BPI-.

Tracking the recipients of the main national investment funds is challenging as the the GPI and PIA3 record the billion spent per activities and objectives and not per recipients. However, the importance of the PIA3 can be evidenced by its support to significant French projects that fall under pillar 3. Terra Lab<sup>80</sup> and the S3P<sup>81</sup> project are two prime examples of French projects falling within the scope of pillars 3 that have been supported by the PIA3. The first one, a consortium of public research centres, aims to accelerate research and innovation in Big Data analytics and is totally funded by PIA3. The second one has launched the S3P platform with the objective of accelerating the development and exploitation of IoT devices, gateway and applications at the best cost and speed. The S3P project is supported by a total of EUR 18.3 million coming from the PIA3.

In addition to these two funds, the French government has set up a ***Plan d'Action pour l'investissement et la croissance des entreprises (Action Plan for Investment and enterprises' growth)*** in 2017. One of the priorities of the plan is to enhance the digitalisation and innovation of enterprises, in particular through the creation of a fund of EUR 10 billion that support disruptive technologies.<sup>82</sup>

France also has a financial mechanism specially designed to support enterprises' investment in R&D, the ***crédit d'impôt recherche -CIR- (tax credit for R&D)***. The scope of this mechanism encompasses the investment made by companies in the context of their digital transition. R&D investments are supported through direct subventions or tax credits. In 2018, the amount of the CIR was of EUR 5.5 billion.<sup>83</sup>

In 2015, the French government launched the **French Tech Acceleration Fund** to support the French Tech (see section 2.1) with EUR 200 million aiming to develop start-up accelerators. Such accelerators provide infrastructures, training programmes and funds for the development and growth of French start-ups.<sup>84</sup> In 2018, the government announced the addition of EUR 400 million to strengthen the French Tech.<sup>85</sup>

A part of the French government strategy to support research development on Artificial Intelligence foresees EUR 665 million until 2022 among which EUR 200 million will target research centres and future public-private partnerships.<sup>86</sup>

In addition to all these support mechanisms, the French government has implemented innovation vouchers schemes. One example of these schemes is the “Voucher IoT”.<sup>87</sup> This initiative aims to support SMEs, which produce IoT and connected devices by connecting them with companies providing electronic services. The French government helps to decrease the overall cost of the contracts for the first industrialisation of the devices. A grant of 15% of the price of the contract is offered up to EUR 30,000 for each project.

Two other types of innovation vouchers from the French Public Bank for Investment (BPIFrance) are also meaningful for this study.<sup>88</sup> The support for the feasibility of innovation (*Aide pour la faisabilité de l'innovation -AFI-*) provides a grant or a recoverable advance in order to validate the feasibility of a project. The goal is to support companies in their innovation processes by helping them via feasibility studies and skills integration. The second type is the support for innovation development (*aide pour le développement de l'innovation*). This support takes the form of recoverable advance or loan up to EUR 3 million targeting SMEs. The support aims to fund their participation in R&D and innovation projects at national or international or the launch of innovative products with industrial potential.

### 3 Conclusions

The following table provides an overview on how the different digitalisation initiatives implemented in France have been funded.

**Table 9: Breakdown for the financing of the initiatives**

	Pillar 2	Pillar 3	Pillar 4	Pillar 5
	Digital Innovation for all	Partnerships and industrial platforms	Regulatory framework for digital age	Preparing for digital future (skills)
Alliance of the Industry of the Future	n/a			
French tech and French Tech initiative	Since 2015, at least 600 million <sup>89</sup>			
French competitiveness clusters and France IT	In 2016, the average budget for one competitiveness cluster was of EUR 1.5 million			
Technical Centres for the Industry	EUR 304 million <sup>90</sup>			
Great school of digital				EUR 71,277,924 (2017)
National Investment Plan and the Investment Programme for the Future 3	EUR 57 billion for the National Investment Plan (2018-2022). The Programme for the Future 3 integrates it with EUR 10 billion.			EUR 14.6 billion of the National Investment Plan.
Action Plan for Investment and enterprises' growth	EUR 10 billion (since 2017)			
Tax credit for R&D	EUR 5.5 billion (in 2018)			
French Tech Acceleration Fund	EUR 600 million (in 2018)			
French government strategy to support research development on Artificial Intelligence	EUR 666 million (2018-2022)			
Innovation Vouchers - Voucher IoT-	A voucher of 15% of the contract is offered up to EUR 30,000 per project			
Support for the feasibility of innovation	N/A			
Support for innovation development	Loan or recoverable advance up to EUR 3 million			
Total spending	At least EUR 74.74 billion between 2015-2022 (including EUR 975 million across Pillars and EUR 73.8 billion under support mechanisms)			

AIF is the main governing body that pilots the French initiatives. It also ensures continuity between the new strategy and the previous and ongoing programmes (Industry of the Future, Digital Transition). The French government has set out its general approach for digitalising industry in its Digital Agenda. This roadmap has paved the way to the adoption of the main legislative framework for digital issues, the Law for a Digital Republic, adopted in 2016. In addition to the initiatives mentioned above, France has a national strategy, *Transformer notre Industrie par le numérique* (Transform our industry through digitalisation), that aims to enhance the digital transition. It sets quantitative objectives to support SMEs' digitalisation through financial mechanisms. One of the goals of this strategy is also to increase synergies between its industrial sectors via the exchange of best practices and the development of digital platforms. The two main national investment plans to support the French digital transition are the GPI and the PIA3.

France has four initiatives that fall under Pillar 2 of the DEI initiative: the French competitiveness clusters, the Technical Centres for the Industry, the Alliance of the Industry of the Future and the French Tech. The two first participate in the building of a powerful network of DIHs. In addition to

the 12 ones referenced by the Commission, there are 12 IT clusters, 17 CTI and 13 French Tech Metropoles. They all provide physical infrastructures where enterprises and SMEs can test latest technologies, receive tailored expertise and guidance. These DIHs also encourage greater synergy between research and industry. The AIF plays a key role in the implementation of pillar 2 in France for instance with the support of local points of information to help SMEs in their digital transition. The AIF and the French Tech also encourage large-scale public-private partnerships to foster the industry digitalisation (Pillar 3 of the DEI initiative). Both gather consortia of public-private actors to support the development of digital initiative, be it at the national level (AIF) or at the local level (the French Tech through the French Tech Metropoles).

With regards to the regulatory framework (Pillar 4 of the DEI initiative), France has implemented two main regulations: Law for a Digital Republic Law (2016) and Law of the 26 February 2018 implementing the NIS Directive. With this new framework, public data will be progressively opened, and user's rights and cybersecurity will be strengthened.

In France, the two main initiatives supporting the enhancement of digital skills (Pillar 5 of the DEI initiative) are the Great School for Digital and the main financial schemes (the National Investment Plan and the Investment Programme for the Future). Since 2015, 11,409 people have been trained thanks to the Great School for Digital and under the National Investment Plan 2 million people are expected to be trained.

One of the main challenges for the digitalisation of the French industry is that the initiatives are scattered. The main objective of the government is to coordinate all these initiatives and to increase their visibility to support the digitalisation of enterprises' business models and production schemes.

The box below presents a good practice, adapting the French regulatory framework to the digital age.

### **Box 1: Good practice**

The Law for a Digital Republic is part of the French Digital strategy and implements the legal part of this broader French strategy. This law entered into force in 2016 and encompasses all the aspects of the digital (innovation, knowledge sharing, protection of users' rights, share the benefits of the digital to all). The main outcomes of the law are:

- The free access to public data (data from the public domain, administrative documents, information about enterprises, scientific publication or energy consumption related data);
- Data privacy, users' rights and the security of private correspondence are better protected.

To conclude, the table below provides a general overview of the main digitalisation initiatives implemented in France and the overall progress the country has realised so far with regard to digitalisation. The table below illustrates the applications, usages and outcomes of the main French initiatives all clustered by relevant pillar of the DEI.

**Table 10: Input/output overview of the initiatives**

		Pillar 2	Pillar 3	Pillar 4	Pillar 5
		Digital Innovation for all	Partnerships and industrial platforms	Regulatory framework for digital age	Preparing for digital future (skills)
Application	Name of key initiatives (start dates in brackets)	Alliance of the Industry of the Future (2015), French tech and French Tech initiative (2013), France cluster (1998) and France IT (2006), Technical Centres for the Industry National, Investment Plan 2018-2022 and Investment Programme for the Future 3.	Alliance of the Industry of the Future (2015), National Investment Plan 2018-2022 and Investment Programme for the Future 3.	Law for a Digital Republic (2016) and the Law of the 26th February 2018 implementing the NIS Directive (2018).	Great school of digital (2015), Investment Plan 2018-2022 and Investment Programme for the Future 3.
	Funding (total amount and period)	EUR 304 million and EUR 57 billion for the National Investment Plan.	EUR 57 billion for the National Investment Plan		For the Great school for digital, EUR 71,277,924 in 2017. And about EUR 14.6 billion of the GPI deals with skills development.
	Industries addressed	All	All	All industries in general with a focus on public services and industries crucial for the national economy (energy, transport, public services, defense).	All
	EU programme involved	No	No	No	No
Usage	Perception of initiative	Government support to digital transformation is perceived as rather useful (3/5)		Progress have been made but some areas still need improvements.	Perception of usefulness of government initiatives on digital skills
	Take-up	12 DIH, 13 French Tech Metropoles	n/a		The GPI aims to train about 2 million people.
Outcomes	Perception of outcomes	n/a	The level of innovation in digital industries is rather satisfactory (3/5)	n/a	n/a

		Pillar 2	Pillar 3	Pillar 4	Pillar 5
	Outcome metrics	DESI ranking in 2018: 18 <sup>th</sup>		From 2015 to 2017, the total capex spending increased by 11.49%.	From 2015 to 2017, the number of persons employed with ICT specialist skills has increased by 4.44%. In the same period, the share of enterprises providing training to develop ICT skills has decreased by 9.5%.
	Change in outcomes	France's DESI ranking is stable as the country's position has not changed from 2017 to 2018.			
End-goal	Productivity growth	Between 2010 and 2017, the real labour productivity per person employed in France increased by 5%, with the highest increases in 2010 (1.8%) and 2017 (1.1%).			

Summary	The French DESI ranking has not changed from 2017. France has recently launched the strategy Transform our industry through digitalisation that aims to coordinate all the initiatives. Most of the initiatives have been implemented recently, thus the concrete impacts will happen in the coming years.
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## Annex 1 list of stakeholders interviewed

Type of stakeholder	Name of organisation
Government representative	Ministry of Economy, industry department
Government representative	Ministry of Economy, finance department
Trade-union	Syntec numérique (Trade-union of the digital industry)
Cluster	CAP Digital

## Endnotes

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- <sup>1</sup> European Commission (2018). Digital Economy and Society Index (DESI) 2018 Country Report France. Available at: [http://ec.europa.eu/information\\_society/newsroom/image/document/2018-20/fr-desi\\_2018-country-profile\\_eng\\_B43FFD93-B629-39E2-68E98CEED0D6C30F\\_52219.pdf](http://ec.europa.eu/information_society/newsroom/image/document/2018-20/fr-desi_2018-country-profile_eng_B43FFD93-B629-39E2-68E98CEED0D6C30F_52219.pdf).
- <sup>3</sup> Eurostat, GDP per capita inflation-adjusted and Employment and activity of the population aged from 15 to 64 years.
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