



CATALONIA **ACTION PLAN**

JUNE 2022



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1. Part I General Information

PROJECT

SMARTY

PARTNER ORGANISATION

Catalan Regional Government
i2CAT Foundation

COUNTRY

Spain

NUTS2 REGION

Catalonia ES51

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Partners from regions across Europe have joined forces to exchange best practices on how policies related to Structural Funds can unlock Industry 4.0 (I4.0) to its full potential for their business ecosystems.

The SMARTY project has established a common basis of policy learning among its members to overcome I4.0 adoption barriers through a variety of novel approaches, such as financing mechanisms, innovation hub services, digitalisation roadmapping and supply-demand brokerage.

These best practices have been analysed through a project methodology that has graded such approaches based on their measurable impact in their host regions, as well as their potential of transferability and relevance for adoption in other SMARTY regions.

The following Action Plan from the Catalonia region of Spain applies a selection of SMARTY Good Practices (GPs) of high stakeholder interest to improve the governance of selected initiatives in its ERDF 2021-2027 Operational Programme. Each of these initiatives are focused on fostering the further adoption and impact of I4.0-related technology across its SME and industrial ecosystem:

- Digital Catalonia Alliance (DCA)
- Digital Innovation Hub of Catalonia (DIH4CAT)
- ProACCIÓ 4.0

Carrying out the Action Plan will conclude with a change in the management of the policy instrument via improved governance and implementation of the targeted initiatives' activities.

The targeted impact of the foreseen policy instrument change includes:

- Improving the supply-demand brokerage and matchmaking in I4.0-related clusters.
- Optimising the collaboration models between academic and business ecosystems to aid Catalonia's I4.0 capacity and uptake.
- Improving the diagnosis of I4.0 and digital transformation needs of SMEs.

2. Part II Policy Context

The Action Plan aims to impact investment for a Growth and Jobs programme. The policy instrument addressed is the **ERDF Regional Operational Programme 2021-2027 of Catalonia**, expected to be approved in Q3 2022.¹

2.1 Background on the Catalonia region and its economy

With 7.5 million inhabitants and a surface area of 32,108 square kilometres, Catalonia is a highly competitive European economy making up almost 20% of Spain's industrial GDP.

Historically a trading nation, Catalonia's economic activity has always depended on its ability to connect to the rest of the world. Its location in the Mediterranean and its transport infrastructures, as well as its trading, entrepreneurial and open economy, have made it a top rank strategic position in the south of Europe with Barcelona serving as a key meeting point for international business.

In January 2018, there were 1,663,162 companies registered in Catalonia with employees, with 86.2% having less than 10 employees and 94.8% having less than 50 employees. Only 0.3% of companies have more than 200 employees, placing SMEs at the core of Catalan business ecosystems.

¹ The original policy instrument targeted at the start of the project was the previous iteration, ERDF Regional Operational Programme 2014-2020 of Catalonia, now obsolete for additional changes. The Action Plan targets the new 2021-2027 programme based on the current version that is pending final approval.

Catalonia, An economic motor in Europe

CATALUNYA HAS 1.7% OF EUROPEAN UNION'S POPULATION.
7.7M, SIMILAR TO SWITZERLAND OR AUSTRIA

IT IS ONE OF THE "FOUR MOTORS FOR EUROPE" WITH LOMBARDY,
AUVERGNE- RHÔNE-ALPES AND BADEN-WÜRTTEMBERG,



€224,115m GDP.
Higher than Portugal
and similar to Finland

19.8%
industrial GDP

• 35,339 industrial companies
(18.1% of Spanish Industrial enterprises).



Catalonia attracts 2.86% of
the innovation funds granted
through the horizon 2020
program in the UE28

Catalonia represents
4.1% of EU28 scientific
production

1st
startup hub in southern
Europe



Exports. Ratio exports / GDP
similar to Denmark or Sweden
(both with higher GDP). Higher
than Portugal or Finland

Catalonia is the 2nd region in
Western Europe in job creation by
foreign investment. Ahead of regions
like South East or West Nederland

The financial times group has
recognized Catalonia as the best
region in southern Europe for
investing in 2020 and 2021

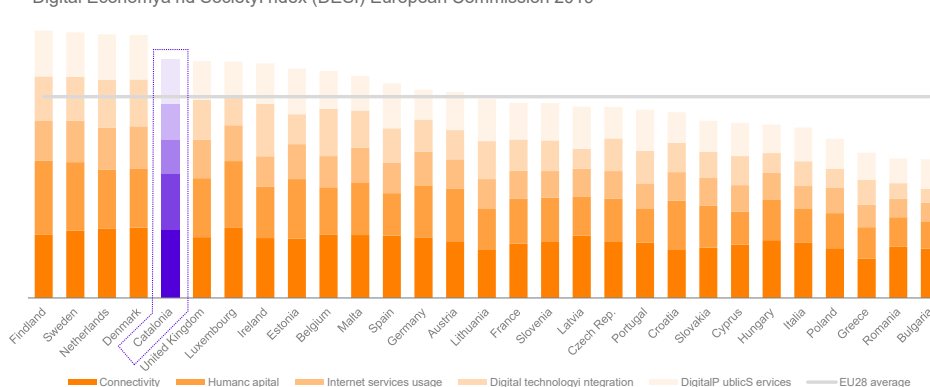
Source: ACCIÓ, based on data from Idescat, INE, Eurostat, CDTI, fDiMarkets, FECYT-Icono and Eurostat from Web of Science and MINCOTUR

Key figures and context of the Catalan market

Catalonia, a leading digital ecosystem in Europe

- Catalonia is the 5th most digitized region in the EU, above the EU28 average.
Orkestra Fundación Deusto – Digital Economy and Society Index (DESI) European Commission 2019
- Connectivity in Catalonia occupies the 4th place in the EU, and also above the EU28 average.
Orkestra Fundación Deusto – Digital Economy and Society Index (DESI) European Commission 2019
- Digital public services in Catalonia have an advanced level compared to the EU28 average, which allows it to obtain the 5th position.
Orkestra Fundación Deusto – Digital Economy and Society Index (DESI) European Commission 2019

Digital Economy and Society Index (DESI) European Commission 2019



Source: ACCIÓ based on Orkestra Fundación Deusto – Digital Economy and Society Index (DESI) European Commission 2019

Digitalisation metrics of Catalonia

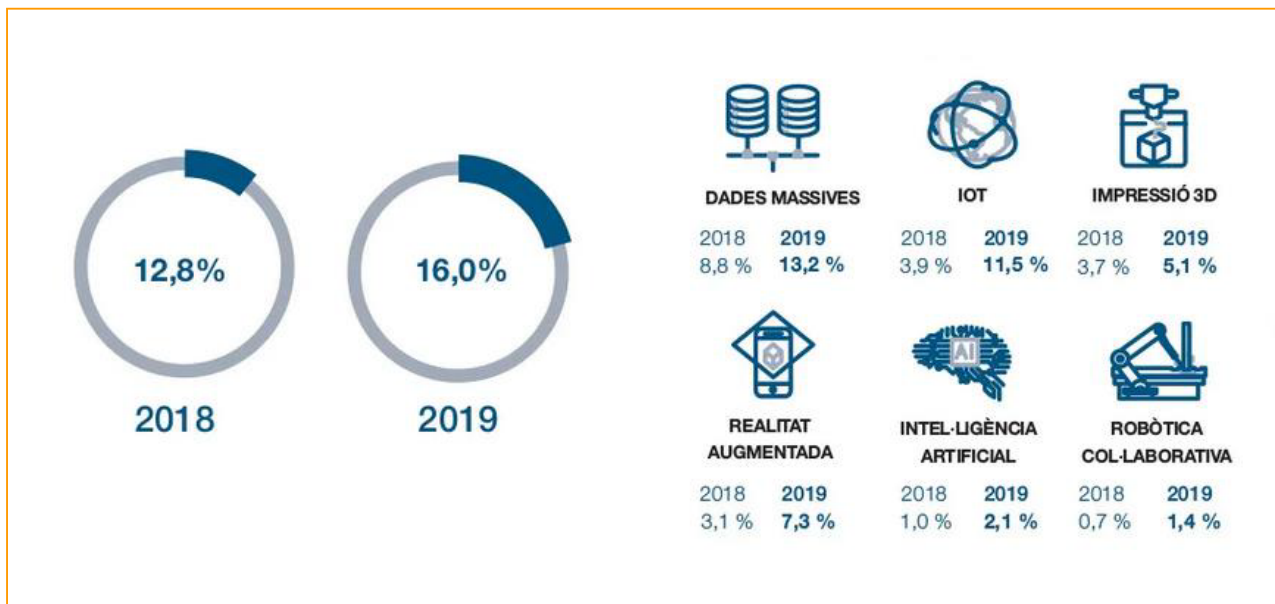
2.1.1 Industry 4.0 transformation in the Catalan market

The Catalan Government recognises Industry 4.0 transformation as a driver for increased competitiveness and sustainability.

The impacted market for I4.0 in Catalonia is significant, with highly diversified manufacturing sectors. Primary industries are chemical manufacturing, food, pharmaceutical and transport material, while chemical products, automotive and manufacturing equipment being the largest export sectors. These traditional industries, together with emerging sectors such as biotech and renewable energy, and services sectors like trade, ICT, finance, healthcare, media and logistics, represent two-thirds of the Catalan GDP.

The main applications of the most developed technologies in the region are additive manufacturing, simulation, advanced robotics, augmented reality and cybersecurity, among others.

But the progress in I4.0 technology adoption by companies varies heavily among sectors. The automotive industry is quite advanced in the transformation, while the food sector, for example, has just started. Many sectors in the region have in fact seen a low adoption rate of I4.0 tech by local industrial companies, despite Catalonia being the 5th most digitised region in Europe.



Source: ACCIO Barometer of innovation 2019

I4.0 technology adoption rates among Catalan industrial companies

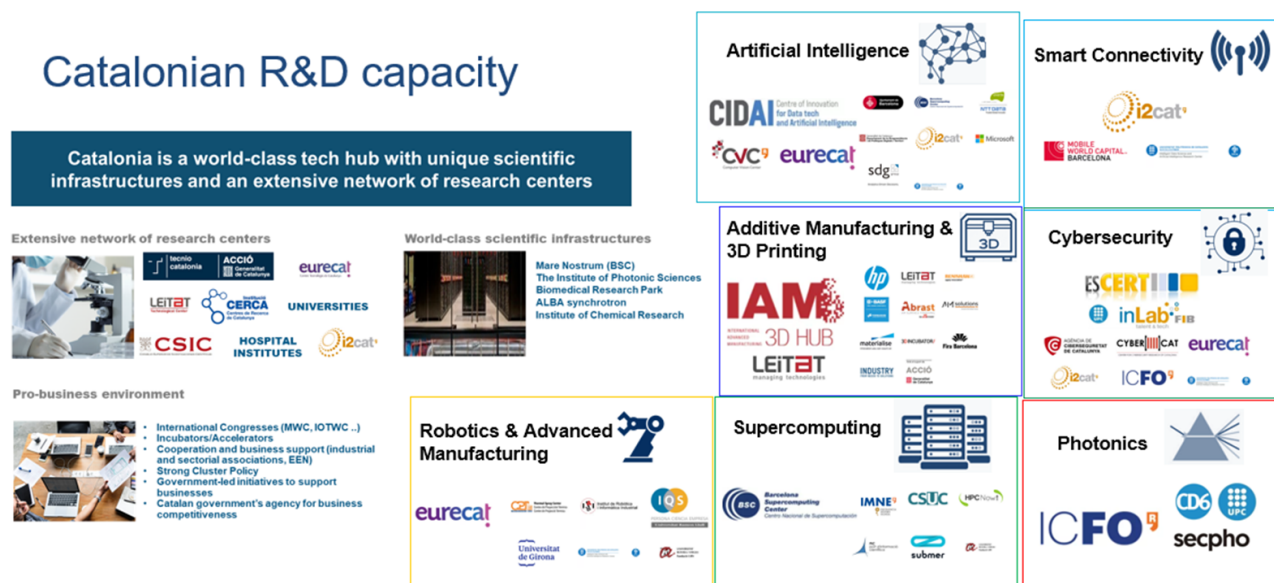
According to a survey from the Chamber of Commerce of Barcelona and the Statistical Institute of Catalonia (Idescat), 84% of the 554 industrial companies surveyed had not yet started their I4.0 or digital transformation, with key reasons being lack of awareness, an unclear business case and return on investment (ROI), lack of skills, and absorption capacity.

2.1.2 Catalonia's Research and Innovation capacity

Catalonia's industry capacity is complemented by its competence and investment in R&D, hosting some of Europe's leading research institutions, innovation hubs and infrastructures.

Innovation hubs bring together core capacities in Artificial Intelligence, Supercomputing, Cybersecurity, Smart Connectivity, Additive Manufacturing & 3D Printing, Robotics & Advanced Manufacturing and Photonics, led by benchmark competence centres across Catalonia, such as Barcelona Supercomputing Centre (BSC), Computer Vision Centre (CVC), Eurecat, i2CAT, Leitat, Institute of Photonic Sciences (ICFO) and the Polytechnic University of Catalonia (UPC).

In terms of research infrastructures, examples include the Mare Nostrum supercomputer of Barcelona Supercomputing Centre, the National Computational Centre, the ALBA Synchrotron, the Barcelona Nuclear Magnetic Resonance Laboratory, and the Integrated Micro and Nanoelectronics Clean Room of the University Services Consortium of Catalonia. As well, the Biomedical Research Park of Barcelona is a leader in the field in Southern Europe.



Catalonia's R&D capacity

R&D is a strong focus of the region's private sector, as well, making up 61.1% of total R&D expenditure (2018), with a growing number of top companies bringing I4.0 technology investment and creating innovation hubs in the region. For example, HP hosts in Catalonia its largest 3D printing facilities outside the US. Other multinationals, such as Nestlé, Asics, ERNI, Nissan, Bayer, BASF, Siemens, Amazon and Microsoft, continue the trend of investing in Catalonia to build centres for Industry 4.0 and process digitalisation. There is also a strong tradition of working in clusters and business associations linked to Industry 4.0, like Secpho (Cluster of Technological Innovation) and Cluster MAV (Advanced Materials Clusters).

2.2 Policy Instrument: ERDF Programme in Catalonia

The focus of this Action Plan is to increase I4.0 adoption through improvements to the forthcoming **ERDF Operational Program in Catalonia 2021-2027**, based on applying learnings from the Good Practices of the SMARTY project towards better implementation and governance of key initiatives in the programme (detailed in "Part III Details of the actions envisaged").

Like its predecessor, the programme of 2014-2020, Catalonia's ERDF programme is developed within the framework of the **Research and Innovation Strategy for the**

Smart Specialization of Catalonia (RIS3CAT). The strategic objectives of RIS3CAT helped shape and prioritise the ERDF Operational Programme, and its context is relevant to understanding the focus of the policy instrument.

2.2.1 Background on RIS3CAT: Research and Innovation strategy for smart specialisation that shapes the region's ERDF programme

The Research and Innovation Strategy for the Smart Specialization of Catalonia (RIS3CAT) developed the priorities of the targeted policy instrument in Catalonia: the ERDF Operational Program 2021-2027.

Research and innovation strategies for smart specialisation (RIS3) have been a key element in the Europe 2020 strategy for smart, sustainable and inclusive growth. In its determination to make knowledge and innovation a priority, the 2014-2020 financial framework of the EU called on governments to draw up RIS3 to ensure that investment in research and innovation financed by European funds were coherent and maximised the impact on the economic and social development of the territories and of Europe as a whole.

In the case of Catalonia, this strategy is embodied in RIS3CAT, which plays an important role in research and innovation since it is the strategy that guides all ERDF investments in research and innovation. RIS3CAT 2014-2020 has promoted projects worth 930 million euros and implemented by 563 organisations.

Europe establishes the goals and main lines of action behind these strategies in the [2030 Agenda](#), the [European Green Deal](#), the [Digital Strategy](#) and the [Industrial Strategy](#). RIS3CAT, with the support of European funds, then promotes and aligns initiatives and actions undertaken by many different stakeholders to develop and implement effective responses to the challenges of most concern to society.

Although the European finance programme covers the 2021-2027 period, the Catalan strategy for the new period is called RIS3CAT 2030 as its actions will be implemented up to the year 2030. It is to be approved during 2022.

RIS3CAT 2030 is firmly committed to transformative, responsible research and innovation as the main drivers that can guide Catalonia towards a greener, more digital, more resilient, fairer socioeconomic model.

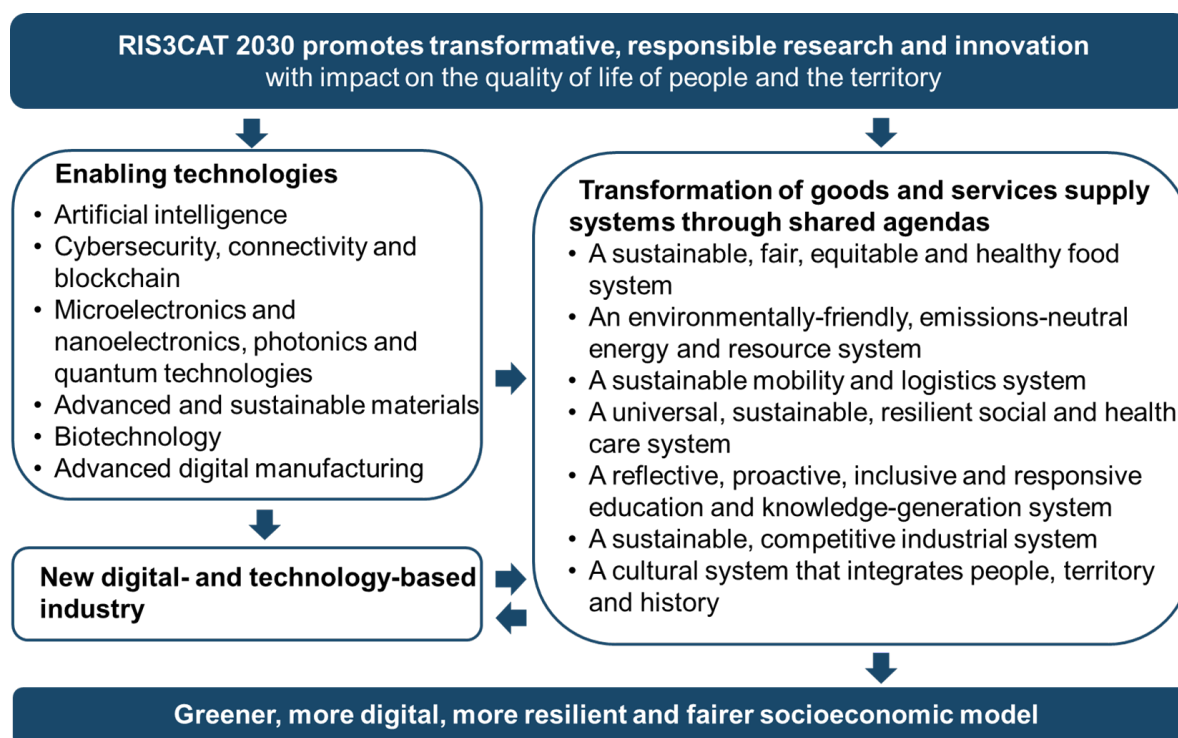
Accordingly, unlike RIS3CAT 2014-2020, RIS3CAT 2030 does not prioritise specialisation areas, but the transformation of goods and services delivery systems. Accordingly, RIS3CAT 2030 promotes:

- A sustainable, fair, equitable and healthy food system.
- An environmentally-friendly, emissions-neutral energy and resource system.
- A sustainable mobility and logistics system.

- A universal, sustainable, resilient social and health care system.
- A reflective, proactive, inclusive and responsive education and knowledge-generation system.
- A sustainable and competitive industrial system.
- A cultural system that integrates people, territory and history.
- A new digital and technology-based industry.

Goods and services delivery systems are understood as socio-technical systems composed of multiple elements, such as industry, technology, the market, regulation, user preferences, infrastructure and cultural expectations. These factors determine how basic goods and services are produced and supplied. The transformation of these systems is not a linear process, but one of coevolution involving changes to all these multiple, interdependent elements and developments.

To transform these systems RIS3CAT 2030 prioritises transformative, responsible research and innovation to develop enabling technologies, create new digital- and technology-based industry and transform goods and services delivery systems to move towards a greener, more digital, more resilient and fairer socioeconomic model. Accordingly, social innovation, in the broadest sense, plays a key role. A priority area of action is to articulate new, sustainable value chains and business models aimed at generating shared value (economic, social and environmental).



RIS3CAT 2030 vision

The technology focus has been refined in RIS3CAT 2030, taking into account the cross-cutting enabling technologies established in the Horizon Europe programme and trends and developments of recent years. Included are technologies that are cornerstones of I4.0 and digital transformation, such as AI, IoT, cybersecurity, and advanced digital manufacturing.

This focus has been extended to the target policy instrument of this Action Plan, the ERDF Operational Programme 2021-2027, which RIS3CAT has shaped at a regional level.

2.2.2 Targeted policy instrument: ERDF Operational Program in Catalonia 2021-2027

On December 17, 2020, the Parliament and the Council adopted the Regulation by which the EU established the Multiannual Financial Framework (MFF) for the period 2021-2027 and for the implementation of the Next Generation program.

The new ERDF program establishes five investment priorities for the period 2021-2027. Between 65% and 85% of ERDF and Cohesion Fund resources will be allocated to these priorities, depending on the relative wealth of the Member States. These are:

1. A more competitive and smarter Europe, promoting innovative and smart economic transformation and regional connectivity to information and communication technologies.
2. A greener, low-carbon Europe in transition to a zero-carbon, resilient net economy, promoting a clean and equitable energy transition, green and blue investment, the circular economy, mitigation and adaptation to climate change, risk prevention and management and sustainable urban mobility.
3. A more connected Europe improving mobility.
4. A more social and inclusive Europe implementing the European Pillar of Social Rights.
5. A Europe closer to the citizens, promoting the sustainable and integrated development of all types of territories and local initiatives.

To implement these objectives, eligible actions for the ERDF OP 2021-2027 include:

- Infrastructure investments.
- Activities for applied research and innovation, in particular industrial research, experimental development and feasibility studies.
- Investments in access to services.
- Productive investments in SMEs and investment challenges to protect existing jobs and create new ones.
- Equipment, software, active and intangible materials.

- Networks, cooperation, exchange of experiences and activities involving innovation clusters, in particular between companies, research organisations and public administrations.
- Information, communication, studies.
- Technical assistance.


Within Catalonia's 2021-2027 Operational Programme, specific objectives of the policy instrument are targeted by the Action Plan:

- Developing and enhancing research and innovation capacities and the uptake of advanced technologies.
- Knowledge transfer and cooperation between companies and research centres.
- Developing skills for smart specialisation, industrial transition, and entrepreneurship.

Within the framework and financing of the policy instrument, regional initiatives have been developed to fulfil these objectives. The Action Plan aims to improve their implementation (management and governance) based on the learnings from the SMARTY Good Practices of the other regions.

The three targeted initiatives of the policy instrument (ERDF Operational Program in Catalonia 2021-2027) include the Digital Catalonia Alliance (DCA), DIH4CAT and ProACCIÓ 4.0 – introduced briefly below and detailed further in Part III:

- The **Digital Catalonia Alliance (DCA)** is an initiative that gathers the main emerging technological sectors of Catalonia into an innovative, visionary, disruptive and collaborative alliance of technological communities. The initial communities include Internet of Things (IoT), Drones, Artificial Intelligence (AI), NewSpace and Cybersecurity.
- The **Digital Innovation Hub of Catalonia (DIH4CAT)** is a non-profit innovation ecosystem, formed by the primary regional agents to support the digitalisation of Catalonia. It aims to promote the technological transformation of SMEs (with a special focus on industrial sectors and technology providers), technology start-ups and public entities.
- **ProACCIÓ 4.0** is a public programme that provides services, grants and activities to the Catalanian business ecosystem to increase their Industry 4.0 technology education, accessibility and implementation.





Become a member of the Digital Catalonia Alliance

and enjoy plenty of benefits

Get to know everything we offer



Access to knowledge, technology, and infrastructure

DIH4CAT,



Catalonia's Digital Innovation Hub


Connecting 7 strategic technological areas: Artificial Intelligence, Supercomputing, Cybersecurity, Smart Connectivity, Additive Manufacturing and 3D Print, Robotics and advanced manufacturing and Photonics.




DIH4CAT

Digital Innovation Hub
de Catalunya








More than **700** requests for the Industry 4.0 Vouchers



More than **200** professionals have received training



More than **100** suppliers have submitted their technology



More than **230** advisors accredited in Industry 4.0

Targeted initiatives of the Action Plan: Digital Catalonia Alliance (DCA), DIH4CAT and ProACCIÓ 4.0

These initiatives of the policy instrument have been selected due to their objectives linking closely with SMARTY's focus on I4.0-related technology uptake, and their activities having parallels with the scope of the SMARTY Good Practices of the other regions so that their learnings can promote added-value and change. Such activities include:

- Matchmaking and brokerage between supply and demand of I4.0-related solutions.
- Harnessing the R&D community to support local business ecosystems in skills and knowhow of I4.0-related implementation.
- Helping SMEs to define their own implementation roadmap of I4.0 related solutions (technical consultancy and diagnosis).

3. Part III Details of the action envisaged

During Phase 1 of SMARTY, the learning exchange process between SMARTY Good Practices and local Catalan stakeholders was successful.

The milestone at the end of Phase 1 identified the specific initiatives of the policy instrument (ERDF Regional Operational Programme 2021-2027 of Catalonia) to improve based on these learnings: (1) Digital Catalonia Alliance (DCA), (2) ProACCIÓ 4.0 and (3) DIH4CAT – introduced in Section 2.2.2 and detailed further in this section.

Phase 2 of the project (the focus of this Action Plan) will develop the implementation plans to integrate these learnings into future, annual workplans of these initiatives. The result of Phase 2 will be the implementation plans of their revised approaches, resulting in a change of the policy instrument through improved governance of the 3 initiatives.

The following subsections detail the SMARTY GPs that Catalonia has analysed and identified components to adopt; the learnings exchanged; the policy instrument initiatives that will benefit from them; and finally, the Phase 2 action steps that will focus on how best to implement them in these initiatives.

3.1 Background on Good Practices identified during SMARTY learning experience

The following Good Practices of SMARTY's interregional exchange are the focus of Catalonia's optimisation of selected initiatives within its ERDF Operational Programme 2021-2027.

3.1.1 SMARTY Good Practice: Gate 4.0

BACKGROUND

GATE 4.0 is the Technological District for Advanced Manufacturing of the Tuscany Region. It brings together companies, research centres and financial operators to stimulate the adoption of new technologies by Tuscan manufacturing companies and encourage the growth of companies and capacities. The initiative currently focuses on 3 services that are of interest to the Catalonia region as part of a public service offering:

1. Matchmaking: GATE 4.0 facilitates matchmaking between companies, financial operators and research institutions, creating connections between supply and demand of technologies for Industry 4.0 and offering strategic and operational support for companies in the digital age, allowing them to select the best suppliers to aid the I4.0 transition, enable new businesses and markets, as well as activate joint innovation projects, based on the sharing of knowledge and assets.
2. Training: GATE 4.0 delivers training courses to help companies with their transition to I4.0 through collaborations with universities, research laboratories and with the district's technological partners.
3. Fundraising support: GATE 4.0 offers a consultancy service for subsidised finance, accompanying companies in accessing the main regional, national and EU public financial support and facilities, aimed at supporting innovation and digitisation, internationalisation, investments for research and the circular economy.

LEARNINGS TO APPLY

This chain of services from GATE 4.0 has parallels with the service offering of DIH4CAT (in particular, its training services), as well as the matchmaking and fundraising support activities of DCA and ProACCIÓ 4.0.

The approach taken to harness the R&D capacity of the region to support training services for a region's business ecosystem will help DIH4CAT further optimise its offering in terms of how the training focus is selected based on business needs, as well as how specific training modules can be combined (e.g. IoT and Cybersecurity) to offer a more holistic support for regional businesses.

In addition, GATE 4.0's matchmaking activities also incorporates fundraising agents, which is a direction that DCA wants to evolve its cluster management beyond supply-demand brokerage.

3.1.2 SMARTY Good Practices: 3M Buckley Innovation Centre (3M BIC) and Advanced Manufacturing Research Centre (AMRC)

BACKGROUND

Based in Huddersfield, the **3M Buckley Innovation Centre (3M BIC)** is a centre for enterprise and innovation for businesses across the region, with a strong focus on SMEs. The centre helps businesses to innovate, connect and grow through access to knowledge, support and technology, all contributing to regional economic growth and productivity.

3M BIC offers transformational capabilities for product development, including design, prototyping and product verification. They work across supply chains for engineering, aerospace, automotive, medical tech, heritage, and creative industries.

At the University of Sheffield, the **Advanced Manufacturing Research Centre (AMRC)** is a network of world-leading research and innovation centres working with manufacturing companies of any size from around the globe.

It is part of the AMRC Group, a cluster of world-class centres for industry-focused R&D of technologies used in high-value manufacturing sectors. The group has specialist expertise in machining, casting, welding, powder metallurgy, composites, designing for manufacturing, testing and training.

It has a global reputation for helping companies overcome manufacturing problems and has become a model for collaborative research involving universities, academics and industry, worldwide.

LEARNINGS TO APPLY

3M BIC's and AMRC's collaboration models between strategic business sectors and the academic research ecosystem offers best practices to adopt for DIH4CAT. Both GPs provide services for their regions' SMEs with the support of the local academic research faculties, graduates, and consultants.

This is the same bridge that DIH4CAT provides in Catalonia, and the learnings to transfer are found in 3M BIC's and AMRC's methodologies to (1) shape the scope of services based on the needs of the local business ecosystem; and (2) develop how such services harness the expertise of the local research community.

In addition, learnings from the two GPs' approaches in integrating the research and business communities will be applied to the Digital Catalonia Alliance (DCA) technology-based clusters that mix I4.0 technology providers with the R&D community to stimulate regional capacity growth and business adoption.

3.1.3 SMARTY Good Practice: Access Innovation

BACKGROUND

Created by the Leeds City Region Enterprise Partnership, **Access Innovation** is a package of support available for businesses to develop new products and processes. The programme helps businesses to access the specialist expertise needed to realise Industry 4.0 and other technology driven innovation by teaming up with the relevant research organisation. Its activities include:

- Providing a multiple stage journey to supporting a company's I4.0 project – including the importance of diagnostic and planning before engaging with technology solutions, using workshops, 1:1 support and financial grants.
- Bridging the gap between public funded business support and Higher Education Institutions / Research bodies, supporting SMEs to find the right support for their innovation and I4.0 requirements.
- Disseminating business case studies available of those SMEs who were supported through the programme, as examples for new companies to see the potential impact of their own project.

LEARNINGS TO APPLY

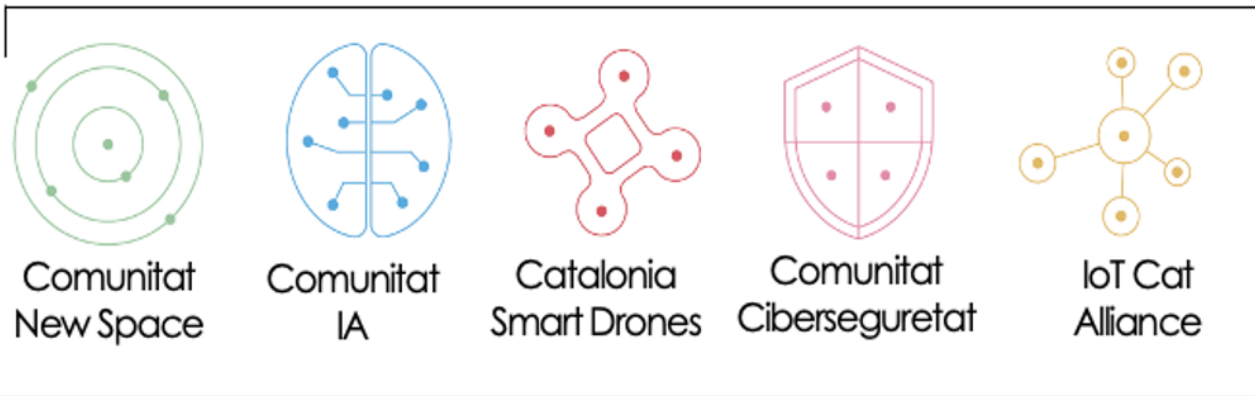
The programme has parallels with Catalonia's ProACCIÓ 4.0 programme with its aim to support companies through the I4.0 adoption process by diagnosing their business/ technology needs as a preliminary step. The learnings to apply are focused on the mechanisms to carry this out, such as their workshops and 1:1 support methodology.

3.2 Targeted Catalan initiatives of the policy instrument (ERDF 2021-2027) to apply GP learnings

As introduced above, the aforementioned learnings to transfer are aimed at the following Catalonia initiatives related to the targeted policy instrument: ERDF 2021-2027.

3.2.1 Digital Catalonia Alliance (DCA)

The **Digital Catalonia Alliance (DCA)** is a developing programme of the ERDF Regional Operational Programme 2021-2027 of Catalonia, consolidating past practices (such as the former IoT Catalan Alliance) into new, technology-focused communities to generate business opportunities.



The technology-focused communities of the Digital Catalonia Alliance (DCA)

DCA provides the following activities for its clusters focused on AI, Cybersecurity, IoT, Smart Drones and New Space.

- **Sectoral demand Dynamization:** to encourage and support the adoption of emerging technologies and solutions by potential I4.0 demand users and aggregators of potential demand. This section consists of several phases:
 - » **Raising the awareness of demand:** awareness-raising sessions that share current problems in selected sectors, such as agriculture, utilities, industry and health; presenting the benefits that technology can bring in these areas; and getting to know success stories of companies and technological stakeholders in the region.
 - » **Sectoral challenges collection:** several meetings held with different companies and organisations interested in adopting solutions based on advanced digital technologies, with the objective to identify potential business opportunities for SMEs within the DCA. These business opportunities are presented to the members of the DCA so that they can prepare their solution proposals and pitch them to the owners of the challenge.
 - » **Matchmaking events:** brokerage sessions held to bring together members of the DCA and demand (challenge owners). The purpose of the matchmaking sessions is to allow both parties to explore possible collaborations to provide solutions to the needs identified in previous stages.

- **Access to funding sources and opportunities:** to support the needs of the emerging digital sector to access R&D&I fundings.
 - » Communicating funding opportunities identified through different programs at local, national and European level, as well as opportunities to take part in consortiums through different communication channels: web, mailing, social networks, etc.
 - » Organising internal meetings with the members of the DCA and offer them training on funding opportunities, eligibility criteria, and other relevant topics to support them in getting involved in specific programs.
- **Access to knowledge, technology, and infrastructures:** to support the members of the DCA to increase their capabilities and awareness of the specific resources they can find in the region. For example, ease the access of SMEs to lab and testing sites at the regional level, allowing companies linked to emerging digital sectors to have benefits at accessing this kind of infrastructures and telecommunications laboratories.
- **Strategic relations:** to connect the emerging digital sector in Catalonia with the existing innovation ecosystem (investors, accelerators, etc.), identifying and communicating opportunities for the business development of companies through investment and acceleration programs.

The application of learnings transferred in SMARTY will focus on refining the brokerage and matchmaking activities of the DCA with the SMARTY good practices GATE 4.0, 3M BIC and AMRC (see the “Learnings to apply” of each GP in Section 3.1). Objectives of the improved governance and implementation include:

- Enhance DCA’s business cluster management of supply-demand brokerage by integrating parts of GATE 4.0’s matchmaking approach between companies, financial operators and research institutes.
- Integrate further Catalonia’s R&D capacities into DCA’s cluster management by applying aspects of 3M BIC’s and AMRC’s approach on analysing a business ecosystem’s I4.0 needs and developing a tailored value proposition from the Catalonia R&D community to meet such needs.

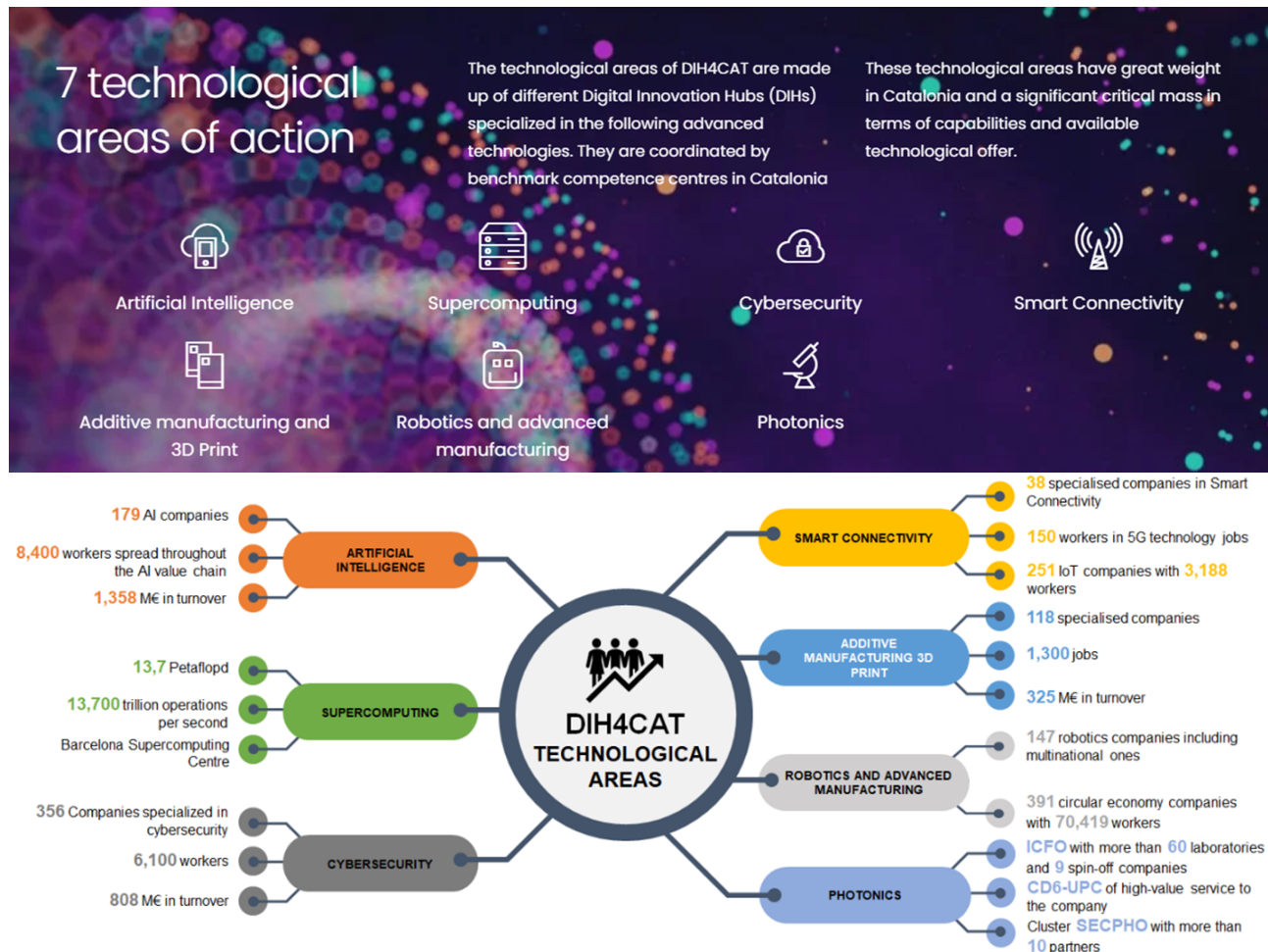
3.2.2 DIH4CAT

DIH4CAT is a non-profit, regional innovation ecosystem in Catalonia, derived from the objectives of the RIS3CAT, ERDF Regional Operational Programme 2021-2027 and its predecessor.

Following the model of Digital Innovation Hubs established by the European Commission, DIH4CAT is configured as a networked service community through which industry and public administrations can access a set of services, infrastructure and technological

and non-technological abilities and solutions to promote its digital and technological transformation, acting in turn as an advanced connector between supply and demand across Catalonia.

A core focus of DIH4CAT is to harness the research capacities of Catalonia to support the goal of increasing I4.0 related technology uptake by the region's business ecosystem. Its central technical office, managed by the Catalanian government's ACCIÓ, integrates this into a service portfolio.



Technology areas of DIH4CAT service offering, using the region's research and innovation ecosystem

The application of learnings transferred in SMARTY will focus on refining the training services and the collaboration between research and business communities (see the "Learnings to apply" of each GP in Section 3.1):

- Optimise DIH4CAT's service offering towards Catalonia's SMEs by applying aspects of 3M BIC's and AMRC's approach on improving academia-industry collaboration through the analysis of business ecosystem needs and deliver services driven by the region's R&D communities to meet them.
- Expand DIH4CAT's training portfolio using the modular approaches taken by GATE 4.0's service offering.

3.2.3 ProACCIÓ 4.0

ProACCIÓ 4.0 is a public programme that provides services, grants and activities to the Catalan business ecosystem to increase their Industry 4.0 technology education, accessibility and implementation.

Launched and managed by the Catalan regional government in 2019 with stakeholders such as the Catalan School of Industrial Engineers and the Chamber of Commerce, the creation of ProACCIÓ 4.0 was in response to a low adoption rate of I4.0 technology by local industrial companies, despite Catalonia being the 5th most digitised region in Europe (DESI index, EC 2019).



ProACCIÓ 4.0 portfolio of services to increase I4.0 uptake in Catalonia.

A portfolio formed around three programme areas are designed to lower SMEs' barriers of adoption of I4.0 technology:

- **Awareness and training services:** such as technology reports, demonstration of use cases, I4.0 technology courses for managers, and aiding company missions at international trade fairs for best-fit solution providers.
- **Provision of a supply-demand ecosystem:** including brokerage activities (per sector or challenge) and an online database of over 1100 accredited suppliers that maps technology themes and geographic location for easy access by companies on the demand side.

- **Funding for diagnosis and implementation projects:** providing vouchers for companies to use with over 350 accredited consultants and 1100 tech suppliers to help develop their digital and I4.0 transformation roadmaps and carry out their implementation (e.g. development, testing, pilots and access to infrastructures and facilities).

The latter service is focused on diagnosing organisations' I4.0 / digital transformation needs to help develop their roadmaps.

The application of learnings from SMARTY will focus on refining the “digital diagnosis” service of SMEs (see the “Learnings to apply” of each GP in Section 3.1):

- Enhancing ProACCIÓ 4.0's digital diagnosis service by adopting mechanisms of Access Innovation's diagnosis of business/technology needs of SMEs (workshop approaches, 1:1 support methodology, etc.).

3.3 Action: Develop refined services for regional I4.0 uptake initiatives that leverage research-industry collaboration for SME diagnosis, training and supply-demand brokerage.

The specific action in Phase 2 will be to develop with local stakeholders an implementation plan of the above learnings to the future workplans of the selected initiatives of the ERDF 2021-2027 Operational Programme policy instrument. The main decision makers to include are the coordinators of the selected initiatives (DCA, DIH4CAT, ProACCIÓ 4.0).

The result will be a change in the management of the policy instrument (ERDF 2021-2027 Operational Programme), via improved governance of these initiatives focused on spurring I4.0 adoption.

The targeted impact of the foreseen policy instrument change includes:

- Improving the supply-demand brokerage and matchmaking in I4.0-related clusters.
- Optimising the collaboration models between academic and business ecosystems to aid Catalonia's I4.0 capacity and uptake.
- Improving the diagnosis of I4.0 and Digital Transformation needs of SMEs.

3.3.1 Steps to implement the action

ACTION STEP 1: CONSOLIDATE RESULTS OF PILOT YEAR OF DCA AND DIH4CAT

Duration: September 2022 – October 2022

Two of the initiatives, DCA and DIH4CAT, are in their freshman year of execution in 2022. The first few months of Phase 2 will be to consolidate results and lessons learned of their pilot year.

ACTION STEP 2: DEVELOP REFINED SERVICES FOR DCA, DIH4CAT AND PROACCIÓ 4.0 FOR THE FUTURE WORKPLANS OF EACH INITIATIVE

Duration: November 2022 – March 2023

Work will be carried out with the coordinators and stakeholders of the Digital Catalonia Alliance (DCA), DIH4CAT and ProACCIÓ 4.0 to integrate the identified, applicable learnings into the workplans of the initiatives.

Applying learnings to Digital Catalonia Alliance (DCA):

- Enhance DCA's business cluster management of supply-demand brokerage by integrating parts of GATE 4.0's matchmaking approach between companies, financial operators and research institutes.
- Integrate further Catalonia's R&D capacities into DCA's cluster management by applying aspects of 3M BIC's and AMRC's approach on analysing a business ecosystem's I4.0 needs and developing a tailored value proposition from the Catalonia R&D community to meet such needs.

Applying learnings to DIH4CAT:

- Optimise DIH4CAT's service offering towards Catalonia's SMEs by applying aspects of 3M BIC's and AMRC's approach on improving academia-industry collaboration through the analysis of business ecosystem needs and deliver services driven by the region's R&D communities to meet them.
- Expand DIH4CAT's training portfolio using the modular approaches taken by GATE 4.0's service offering.

Applying learnings to ProACCIÓ 4.0:

- Enhancing ProACCIÓ 4.0's digital diagnosis service by adopting mechanisms of Access Innovation's diagnosis of business/technology needs of SMEs (workshop approaches, 1:1 support methodology, etc.).

The main mechanism for this step will be a dedicated workshop for each initiative (3 workshops in total) and then follow-up analysis and checkpoints.

ACTION STEP 3: INTEGRATE REFINED SERVICES INTO FUTURE WORKPLANS OF EACH INITIATIVE

March 2023 – June 2023

The results of the analysis will then be implemented into the workplans of the 3 initiatives, resulting in the policy change in the form of the improved management of the policy instrument's operational programme.

3.3.2 Players involved

DIGITAL CATALONIA ALLIANCE (DCA):

The DCA is managed by the Regional Government of Catalonia and the i2CAT Foundation.

The i2CAT Foundation is a non-profit research and innovation centre that promotes mission-driven knowledge to solve business challenges, co-create solutions with a transformative impact, empower citizens through open and participative digital social innovation, and promote pioneering and strategic initiatives. Its R&D and innovation focus include 5G, IoT, Immersive Technologies, Artificial Intelligence, Data Infrastructure, Cybersecurity and Blockchain.

i2CAT will coordinate the action, as it manages the clusters and their brokerage and matchmaking activities.

DIH4CAT:

DIH4CAT is coordinated by the Regional Government of Catalonia via ACCIÓ, the government's agency for business competitiveness.

Belonging to the Ministry of Business and Labour, ACCIÓ is the public facing organisation working to contribute to the transformation of Catalan companies. It has a network of 40 offices worldwide, 7 regional offices in Catalonia, and collaborates with public and private institutions in building tomorrow's company, today.

The competence centres that make up DIH4CAT's network of innovation nodes across Catalonia include Barcelona Supercomputing Centre (BSC), Computer Vision Centre (CVC), Eurecat, i2CAT Foundation, Leitat, Institute of Photonic Sciences (ICFO) and the Polytechnic University of Catalonia (UPC).

The action will be coordinated by i2CAT and the Regional Government of Catalonia.

PROACCIÓ 4.0:

ProACCIÓ 4.0 is also managed by ACCIÓ, the Catalan Government's agency for business competitiveness, and includes a large regional network of I4.0 solution providers and consultants.

3.3.3 Timeframe

Action step 1: Consolidate results of pilot year of DCA and DIH4CAT	September 2022 – October 2022
Action step 2: Develop refined services for DCA, DIH4CAT and ProACCIÓ 4.0 for the future workplans of each initiative	November 2022 - March 2023
Action step 3: Integrate refined services into future workplans of each initiative	March 2023 - June 2023

3.3.4 Costs and Funding

- The cost of delivering the action is limited to the development of implementation plans of integrating the learnings into each initiative's workplans.
- The costs of the initiatives themselves are funded partly by the policy instrument (ERDF 2021-2027) and are independent of the action.
- Quantifying the before-after costs of implementing such learnings into the initiatives (the policy change) will be a conclusion of the Phase 2 analysis.

Endorsement from policy instrument owner

Ferran Roderó

General Director for Economic Promotion, Competition and Regulation

Date:

Signature:

